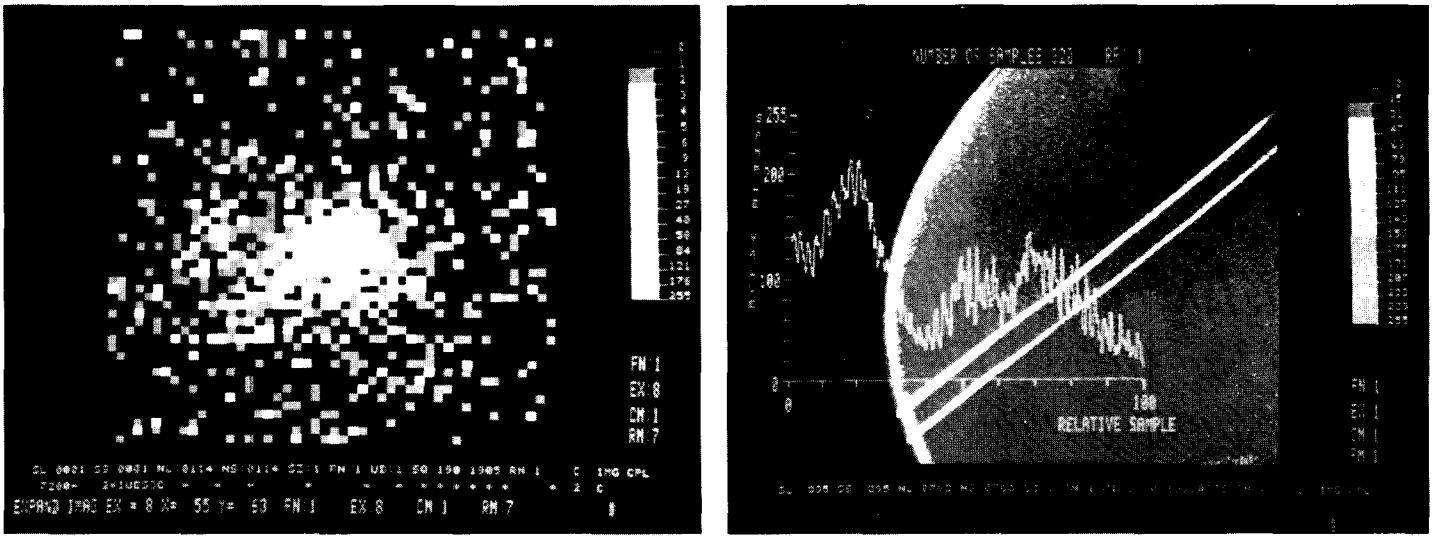
NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

Greenbelt, Maryland and Wallops Island, Virginia

Vol. 33 No. 3 March 1987

Goddard Satellite Watches Exploding Star



SUPERNOVA 1987a — **Left: An image of the sky centered on the supernova in the Large Magellanic Cloud, as obtained by Goddard's International Ultraviolet Explorer (IUE) satellite. The image was obtained with the satellite's Fine Error Sensor camera on February 26. Right: Two ultraviolet spectra of the supernova obtained by the IUE. The straight, bright lines represent the ultraviolet light from the supernova, dispersed in wavelengths, as recorded by the IUE's short wavelength camera. The spectra were obtained by IUE on February 24, about 16 hours after the discovery of the supernova.**

A telescope aboard a nine-year-old orbiting satellite is monitoring the intense emissions of ultraviolet radiation from a recently discovered exploding star, called a supernova, located 163,000 light years from Earth.

Goddard scientists say that the International Ultraviolet Explorer (IUE) satellite has performed superbly since February 24, when regularly scheduled operations were interrupted to focus IUE's 18-inch telescope, the largest now operating in space, on the supernova in the Large Magellanic Cloud, a neighbor galaxy of our own Milky Way.

Supernova 1987a, visible to the naked eye from Earth's Southern Hemisphere, is the brightest seen since the year 1604, and the first bright supernova since the invention of the telescope around the year 1609.

"We have contingency plans on file for special events like the supernova," explained Dr. Yoji Kondo, IUE Project Scientist at GSFC. Kondo said interested scientists around the Nation and overseas submit so-called "target-of-opportunity" proposals to use the IUE telescope on new exploding stars, comets and other unusual objects. Thus, the satellite operators have the necessary information on hand to plan the telescope operations when astronomers spot an event.

Dr. Robert P. Kirshner, astronomy professor, Harvard University, is directing the IUE scientific observations of the new supernova. He earlier had submitted a target-of-opportunity proposal to study future bright supernovae with the IUE. "This is a real opportunity to explore a whole new region of a supernova's spectrum," says Kirshner, who explains that previous supernovae, since IUE was launched in January, 1978, were not bright enough to study at the shortest ultraviolet wavelengths accessible with the IUE telescope and spectrograph. "Earlier supernovae were studied at longer ultraviolet wavelengths with IUE, but the measurement data on those objects only hint at what is being recorded on the new supernova by IUE, since the new object is much brighter."

The first observations of the new supernova, made with IUE on the afternoon of Tuesday, February 24, revealed that it is an intense source of ultraviolet radiation. According to Dr. George Sonneborn, staff astronomer at Goddard's Observatory Telescope Operations Center, "although we made a very short time exposure, just 15 seconds, the supernova is so intense that the first spectrogram was overexposed." Dr. Sonneborn is with the Computer Sciences Corporation, which assists in operating the satellite under contract to NASA.

Ultraviolet rays are a form of light with shorter wavelengths and greater energy than ordinary visible light. Because ultraviolet rays are absorbed in the Earth's atmosphere, the rays cannot be seen with ground-based telescopes. Astronomers must study these rays from space.

Explaining the significance of the discovery of the intense ultraviolet radiation of the new supernova, Kirshner said, "the new supernova is believed to represent the explosion of a star much more massive than the sun. Earlier in the star's lifetime, according to current astrophysical thinking, it must have ejected a great deal of gas that still surrounds it. The intense ultraviolet light found by IUE will be energizing the circumstellar gas around the supernova, and IUE will tell us what happens under these circumstances."

Astronomers believe that new observations from IUE, besides revealing the na-

Continued on page 2

Exploding Star

Continued from page 1

ture of ultraviolet radiation from a supernova and its effects on surrounding matter, will provide precious new data on the "galactic corona," a poorly-explored hot outer atmosphere of our own Milky Way. The Large Magellanic Cloud, the small galaxy where the supernova is located, is also thought to have a corona, which also will be explored thanks to the supernova.

Dr. Sonneborn states, "the supernova is like a bright light bulb located beyond the galactic corona." By studying the absorption of ultraviolet light from the supernova that occurs in the gases of the galactic corona, investigators will learn more about the little-known region."

Dr. Blair D. Savage, professor of astronomy at the University of Wisconsin, Madison, who helped discover the galactic corona, explains the scientific importance of the IUE observations of the new supernova for exploring the galactic corona. "This spectacular event provides an unparalleled opportunity to study the physical nature and composition of the cool and hot gaseous matter situated in and around the Milky Way and the Large Magellanic Cloud."

The observation of spectral absorption lines due to the galactic corona in the ultraviolet spectrograms obtained by IUE indicates the supernova is probably beyond the corona and indeed located in the Large Magellanic Cloud, as astronomers have generally assumed. However, further analysis is needed to confirm this deduction.

"It should be noted," says Kondo, "that this satellite is nine years old and is still operating without some of its original gyros and is long beyond its design lifetime. This shows we can still do first class space science with existing equipment."

Observations of the new supernova will be repeated in coming days as the great stellar explosion begins to fade.

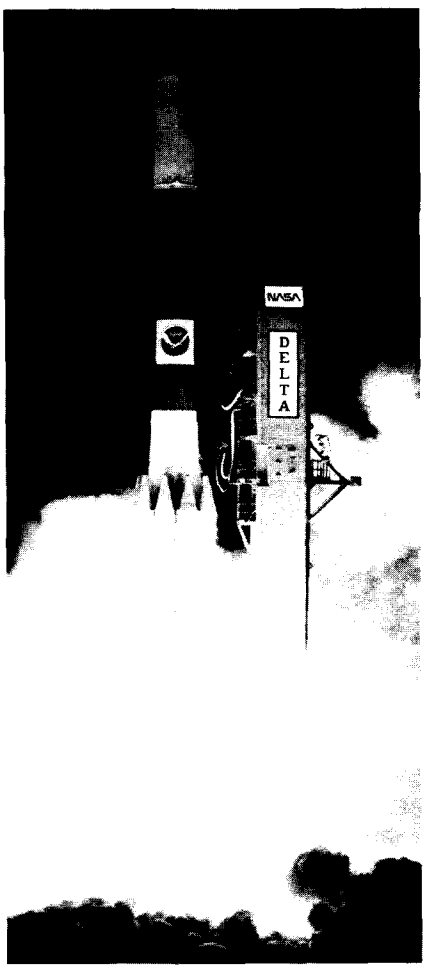
The IUE is a joint project of NASA, the European Space Agency and the United Kingdom Science and Engineering Research Council. The satellite is controlled from the GSFC.

There are also two instruments aboard Goddard's Solar Maximum Mission (SMM) satellite which could possibly yield information about the supernova, according to Joseph Gurman, SMM Project Scientist. They are the University of New Hampshire's Gamma Ray Spectrometer and Goddard's Hard X-ray Burst Spectrometer (HXRBS).

The GRS has observed easily the vicinity of the supernova because of its wide field of view. At the time of this printing, results are not available because the University of New Hampshire has not processed the data yet.

The HXRBS will not observe the supernova unless the Japanese X-ray astronomy satellite ASTRO-C yields results. SMM is solar charged and to position the craft for HXRBS to get a view, would endanger the SMM because it would have to be turned away from the Sun.

GOES-H Goes!



***DELTA 179* carries the Geostationary Operational Environmental Satellite (GOES-H) into the evening sky at 6:05 p.m. from the Cape Canaveral Air Force Station, FL, on February 26. The weather satellite is the seventh GOES spacecraft and the 10th meteorological satellite to be launched since 1974 for transmitting cloud images from a geosynchronous orbit. Launched by NASA, the GOES-H will be operated by NOAA. Congratulations to the Delta and Metsat Projects!**

NASA To Launch Palapa B2-P Satellite

by David Thomas

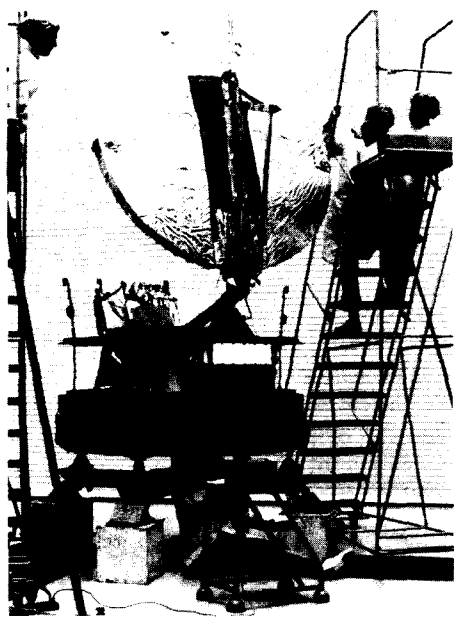
NASA will launch the Palapa B2-P, an Indonesian communications satellite, on Delta 182 from Launch Complex 17B, Eastern Space and Missile Center, Cape Canaveral Air Force Station, FL, no earlier than March 19. Liftoff opportunities for this launch extend approximately three and a half hours from 5:22-9:03 p.m. EST, with three launch windows: 5:22-6:46; 7:02-7:28; 7:45-9:03.

The Palapa B2-P is the second of three spacecraft comprising the Palapa B program. Palapa B1 was launched successfully during the STS-7 mission in 1983. B2 first was launched from the Orbiter Challenger in 1984 during shuttle mission 41-B, but malfunctioned, as did the WESTAR VI communications satellite, when their payload assist modules placed the spacecraft in orbits much lower than the planned geosynchronous transfer.

Both spacecraft, Palapa B2 and WESTAR VI, were recovered and returned to Earth during shuttle mission 51-A in 1984.

Once in orbit, Palapa B2-P will provide 24 additional channels of C-band (6/4 GHz) service to the communications net-

Continued on page 3



***PALAPA B2-P*—Hughes technicians work on the Palapa B2-P communications satellite for the government of Indonesia in preparation for launch aboard the Goddard-managed Delta 182. The launch is scheduled for no earlier than March 19 from the Cape Canaveral Air Force Station, FL.**

Palapa Launch

Continued from page 2

work that provides service to the island of Indonesia and to ASEAN (Association of South East Asian Nations) countries. ASEAN includes the Phillipines, Thailand, Malaysia, Singapore, Papua and New Guinea. The channels, or transponders, will provide improved quality and efficiency to voice, video, telephone, telegraph and high speed data transmissions.

The Palapa satellites are built for Indonesia by Hughes Aircraft Company, Los Angeles, CA. The Operations Control Center for the Palapa B2-P satellite is located at Hughes Communications headquarters in El Segundo, CA. The name Palapa signifies Indonesian unity and commemorates the unification of the nation by advanced satellite communications.

Palapa B2-P will be positioned in a geosynchronous orbit 22,237 statute miles (35,786 km) above the equator at 113 degrees east longitude over the island of Borneo, near the Indonesian Islands.

The Delta 3920/PAM version of the launch vehicle consists of an extended long tank first stage, the thrust of its Rocketdyne RS-27 engine augmented by nine Castor IV strap-on solid motors; the new improved Aerojet AJ10-118K second stage, and a Payload Assist Module (PAM), which functions as the final stage.

The Delta vehicle is a uniform 8 feet in diameter (excluding strap-on motors) and 116 feet in height. McDonnell Douglas Astronautics Corporation, Huntington Beach, CA, is the prime contractor for production and launch of the Delta vehicle.

Following launch by the first two stages of the Delta 3920, Palapa B2-P will be inserted into an elliptical transfer orbit by the PAM. The PAM, built by McDonnell Douglas, is attached to the satellite.

To produce a near-stationary orbit, an apogee kick motor (Thiokol Corporation's Star 30 solid propellant rocket) mounted in the satellite will be fired.

Positioning of the spacecraft will follow, using the satellite's on-board attitude-positioning gas system.

The Hughes Operations Control Center will direct Palapa B2-P through transfer orbit to its final position in geosynchronous orbit. Once the satellite reaches its assigned position, subsystem testing and station-keeping activities will be carried out by Hughes for approximately 30 days. After checkout, the spacecraft will be turned over to Indonesia.

Palapa B2-P (with antennas deployed) is 22.10 feet (6.9 m) high and 7 feet (2.16 m) in diameter. Liftoff weight with perigee stage is 7,515 pounds (3,381 kg). Weight after reaching geosynchronous orbit is 1,437 pounds (652 kg). The spacecraft has a design life of nine years.

March 16th Marks Historic Milestones

by James Capshew

March 16 is a date worth remembering in Goddard history. Dr. Robert Goddard's first rocket flight occurred on that date in 1926 and in 1961 the official dedication ceremony for the Center was held. During the 2½-second flight, the rocket attained a speed of 60 miles per hour and an altitude of 184 feet. This modest event marked the beginning of a new era in aerospace research.

Aided by his wife Esther and a few assistants, Goddard continued his pioneering research for the next two decades, until his death in 1945. Soon afterwards, the United States began increasing its support of rocket science and technology as a result of developments during World War II. Through his wife's efforts, Goddard's legacy was preserved and made available for a new generation of researchers. She organized his papers, drawings, and photographs, and used them to successfully apply for dozens of patents in her late husband's name. By the late 1950s his contributions had become broadly—if belatedly—recognized.

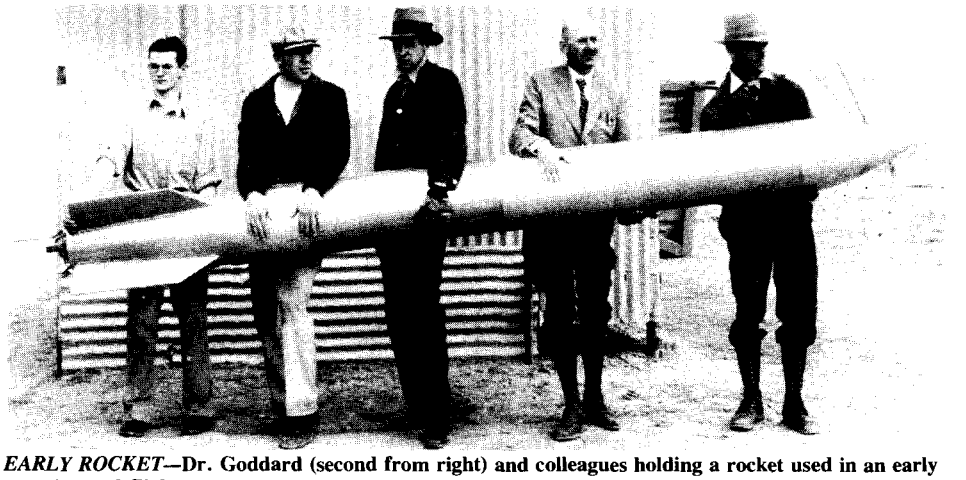
In 1958, the Nation's emerging space program was consolidated under the new National Aeronautics and Space Administration (NASA) and plans were made to establish a space science center near Washington. Within a few months, Goddard Space Flight Center came into being. It was dedicated to the same vision that animated its namesake—the scientific exploration of space.

The official dedication ceremony was held on March 16, 1961, to coincide with the 35th anniversary of Robert Goddard's trailblazing rocket flight. Because so many people were attending, the program was conducted outdoors in front of Building 1, which had been completed a few months before. Various dignitaries came, including congressmen and foreign visitors. GSFC Director Harry Goett began the ceremony and introduced NASA Administrator James Webb, who welcomed the crowd. Detlev Bronk, President of the National Academy of Sciences, made the dedication address, identifying the mission of the center with Robert Goddard's quest for knowledge about space.

Esther Goddard, the guest of honor, unveiled a sculptured bust of her husband, which now sits in the lobby of Building 8. She commented: "I hope that this bust and the man it represents will serve as an inspiration not only to the brilliant and dedicated people who are now at work at this tremendous Space Flight Center but to all who may work here in years to come." Given a permanent visitor's pass marked number one, Esther Goddard occasionally returned to the center before her death in 1983.

Following the ceremony, dedication activities continued for the next two days with a general open house and tours of the

Continued on page 8



***EARLY ROCKET*—Dr. Goddard (second from right) and colleagues holding a rocket used in an early experimental flight.**

Telerobotics Demonstrated at Goddard

by Carter Dove

Goddard, the lead center for providing a flight telerobotic servicer (FTS) for NASA's Space Station program, demonstrated its telerobotics capability for key NASA and Goddard management and special guests in late February and early March.

Goddard has established a telerobotics role program to develop the new and innovative technologies needed to provide Space Station with an FTS capability as an aid to the astronaut crew during extravehicular activity (EVA). It also has begun to outfit a laboratory for the integration, demonstration and evaluation of telerobotics.

Goddard was selected for the telerobotics role, in part, because of its experience in spacecraft servicing—the hallmark of which was the successful recovery and repair of the Solar Maximum Mission (SMM) spacecraft by the STS 41-C astronauts in April 1984.

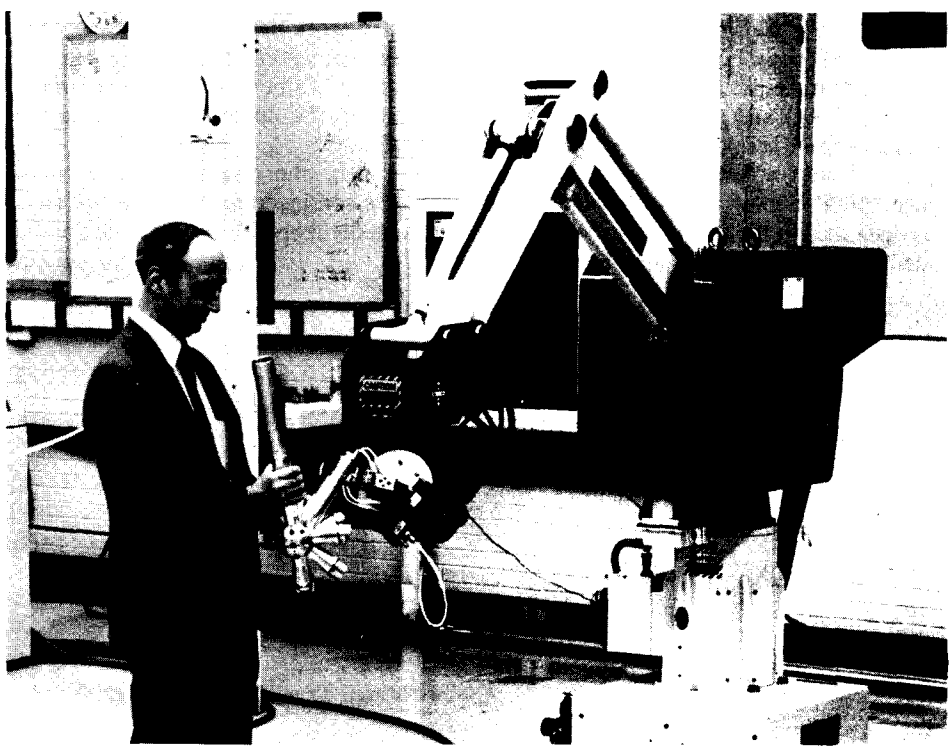
Telerobotic technology is firmly rooted in existing state-of-the-art manipulator systems. These systems fall into two basic categories and are the products of different environments with different requirements:

- *Teleoperated manipulator systems.* These were developed for remote manipulation in an unstructured, often hazardous environment. These systems are designed to handle the unexpected task that may only be encountered once. Therefore, they are characterized by their flexibility and direct control by an operator. In general, a system which has a single motion to a single command is a teleoperated system.

- *Robotic manipulator systems.* Systems such as these were developed for the structured manufacturing environment. These manipulators were designed for repeated, rapid and precise tasks. Manipulators are programmed off-line for a specific task requiring a well-defined sequence of manipulations and then will repeat the sequence with a person monitoring, but not directly controlling, the manipulator.

The system required for efficient work in the space environment incorporates some features of each of the above manipulator systems. The system engineering needed to accomplish this involves the marriage of existing manipulator systems with new technologies and the support subsystems needed for operation in the space environment.

Advances in telerobotics systems technology emerging from the GSFC program, as well as supporting programs of other participating NASA centers, ultimately will be available to industry as a "spin-off."



TELEROBOTICS—Stan Ollendorf, Code 700, (left) prepares to release a prototype Space Station structural component to one of three manipulators in the Telerobotics Laboratory of Building 11.

Stanford Appointed GSFC Comptroller

STANFORD

I. Duke Stanford has been named Comptroller at Goddard, Dr. Noel W. Hinners, Goddard Director announced recently. In this role, Stanford will plan and direct the development, implementation, and administration of the Goddard system of resource management and financial control.

Stanford, who comes to Goddard from an assignment at NASA Headquarters, has broad experience in the management of major programs at both the field center and headquarters levels. He served with the Atomic Energy Commission, Oak Ridge, Tennessee, in internal audit, budgeting, and accounting from 1958 to 1962.

In 1962, he joined NASA as a program analyst at the Johnson Space Center in Houston, Texas, where he worked on the Mercury, Gemini, and Apollo programs. In 1966, he was appointed Chief of Resources Planning and Control for the Skylab program and in 1970 served as the Resources Planning Officer for the Shuttle.

Stanford came to NASA Headquarters in 1972 to serve as Chief of Resources Management in the Office of Space and Terrestrial Applications. In 1979, he was assigned as Chief of Resources Management in the Office of Space Science. Since the merger of the Space Science and Applications programs in 1982, he has served as Deputy Director of the Administration and Resources Management Division.

Stanford is a graduate of the University of Miami, Coral Gables. He is the recipient of numerous NASA awards including the NASA Exceptional Service Medal. He and his wife reside in Vienna, Virginia.

He succeeds C. Edward Wash who has assumed duties with the Space Station Program at NASA Headquarters.

Goddard Wins Equal Opportunity Award

Goddard is the recipient of NASA's Equal Opportunity (EO) award for 1986. The Center also received the first trophy which was awarded in 1981 making GSFC a second-time winner.

The EO trophy recognizes the NASA installation and management team which has implemented the most effective management strategies and has achieved the most positive affirmative action results.

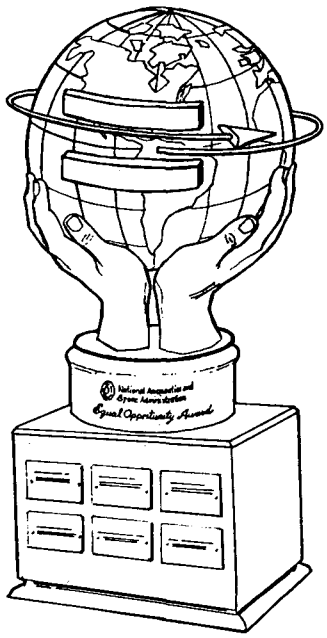
"During FY 1986, GSFC was particularly exemplary in its net increase of minorities and women in all code blocks and in science and engineering managerial/supervisory jobs; in professional administrative hires at managerial and non-supervisory levels; in minority and female business; in feeder programs such as its new Public Service Intern Program; and in numerous other management strategies," NASA Administrator Dr. James C. Fletcher wrote in a congratulatory memo to the NASA Field Center Directors.

"We have a lot of programs but there's more that we can do," explained the Chief of Goddard's Equal Opportunity Program Office, Dillard Menchan. "Our real interest is to create a balance," he added.

In addition to the trophy, Goddard was given $10,000 to further promote equal opportunity. The Office of Equal Opportunity Programs is sponsoring a Center-wide competition to give employees a chance to make a positive contribution toward the elimination of barriers which impact disabled individuals through an engineering or scientific solution. The goal of the competition is to heighten an awareness of issues which normally would not concern a non-disabled employee.

Equal Opportunity Competition

The Office of Equal Opportunity (EO) Programs is sponsoring a Center-wide competition to promote awareness of the accommodation problems faced by disabled employees at Goddard. Cash awards totaling $5,000 (1st prize-up to $2,500) will be granted to individuals who submit the best technical proposals and provide solutions to everyday problems facing handicapped employees in the workplace.



Requirements:

1. The competition is open only to Civil Service employees at GSFC.
2. Ideas and suggestions will be judged based on their immediate practical application and cost effectiveness.
3. Proposals should contain original designs not currently under development by GSFC, its contractors, or the academic community. Adaption of existing technology is encouraged in all designs.
4. The product should enable a disabled Goddard employee to engage in a work activity with greater ease.
5. Designs are to be accompanied with a typewritten explanation (maximum of 3 pages) in the format specified on the suggested form. Forms will be distributed to division-level offices, or may be picked up at the EO Office, Building 8, Room 445.

Deadline:

All technical proposals should be submitted by c.o.b. May 22, 1987 to Christopher Rodriquez, EO Specialist, Code 120. If you have any questions, please call x65715.

NASA Completes Long-Duration Balloon Flights, Payloads Recovered

by Joyce Milliner

The second of two long-duration balloon flights was terminated by NASA officials on Saturday February 21, because of low balloon altitude and waning winds, Wallops officials reported recently.

The latest flight began in Alice Springs, Australia, on February 9, and ended in Brazil near Talochino. NASA contract technicians in Brazil, with the cooperation of the Instituto De Pesquisas Espaciaia (INPE), the Brazilian space agency, terminated the balloon's flight by radio signal to effect a land recovery in a safe location during daylight hours. The transmitted signal fired a pyrotechnic device that released the payload and recovery parachute.

The first balloon was launched from the Australian site on January 25 and landed seven days later near Concepcion, Paraguay, when the flight was automatically terminated because of adverse weather conditions.

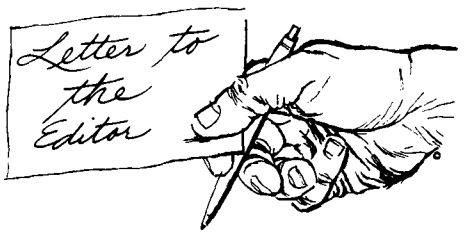
"The fact that the balloons didn't complete their global missions doesn't mean that the flights were failures. The information we have at this time, indicates the balloons' systems functioned properly," said Harvey Needleman, Head, Balloon Project Branch at the Wallops Island Flight Facility. "Based on the performance during flight and the successful recovery of these payloads, we have every reason to believe that these are successful missions. The balloons being aloft for seven and 11 days respectively, provided payload scientists the opportunity to gather more scientific data on a single mission than had ever been previously accomplished."

Both scientific payloads carried by the balloons have been successfully recovered in good condition, for return to the U.S., where they will be refurbished for future flights.

The first balloon carried a joint experiment by Louisiana State University (LSU) and the University of Washington to study nuclear interactions and cosmic ray composition.

The second balloon carried an experiment from the University of California, Berkeley and San Diego branches, to study the new solar phenomena of hard X-ray microflares and super hot flare plasma

Continued on page 8



Dear Editor:

In keeping with years past, Goddard's Black History Club (BHC) once again honored the Center with top quality activities for Black History Month 1987. This year we were not only treated to one or two activities, but to a broad range of programs suited to please every interest.

Starting off the month of February, the BHC presented a panel of airmen from Tuskeegee Institute. It gave an enlightening account of the origin and history of our black pilots. Booker T. Washington's efforts and dreams, in founding this University, were certainly fulfilled by the success of such graduates as these airmen.

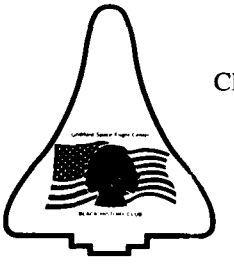
Next, on February 11, 1987, the BHC presented a group of District of Columbia policemen, named "D.C.'s Finest," who sang a cappela. Their renditions of oldies but goodies were superb. I felt as though I was listening to the original artists.

Then, on February 25, the renowned Duke Ellington School of the Arts presented "Scenes from Soweto," a drama about a young Oxford graduate who returns to his home in Soweto, South Africa in 1975 to find his country on the brink of a Civil War. The students did such justice to the story through music, dance, and drama that it temporarily made me slightly oblivious to the story's tragic ending.

Next, the BHC presented Colonel William A. DeShields, U.S. Army Retired, who discussed the "Black Military Experience from the Revolution to Vietnam." DeShields joined the educational lecture circuit upon retirement, to help create a broader range of role models for young blacks. The DuVal High School Gospel Choir shared the program with DeShields.

To end the month's activities, the BHC sponsored a sold out scholarship dinner dance benefiting Coppin State College in Baltimore. The dinner, dance and fashion show was a grand finale for the patrons who attended and a justifiable reward for the BHC members for their months of hard work.

I am sure the people at Goddard feel the same as I in offering heartfelt thanks to each and every member of the Black History Club for the Black History Month activities of February 1987.



Claudia A. Brevard
Code 662

"SCENES FROM SOWETO"—**Students from the Duke Ellington School for the Arts performed a drama as part of Goddard's Black History Month activities in February.**

Blood Donors

Following is a list of Goddard donors who were cited by the American Red Cross with gallon pins at the Bloodmobile of February 4, 1987.

Name	No. of Gallons
Douglas Byrd	1
Alfred Chang	1
JoAnn Clark	2
David Hart	1
Patricia Johnson	1
Adolf Lekebusch	6
Claybourne Magee	5
Thomas Manteufel	3
Robert Nelson	1
Micheal Raynor	1
Kathy Reardon	6
Kenneth Reed	2
Jeffrey Robel	1
Richard Schwartz	1
Web Smith	5
Mark Steiner	1
John Unger	15
Mary Windschitl	1

THANK YOU, Goddard, for supporting the urgent need for blood in our community! Two hundred nineteen donors presented themselves; 186 productive pints were collected. Our goal of 175 was well exceeded. The next bloodmobile visit will be on April 1, 1987 from 8:30 to 2:30 in Bldg. 8 auditorium.

Mail your story to the Goddard News (Code 130), or call the Editor at 286-7277.

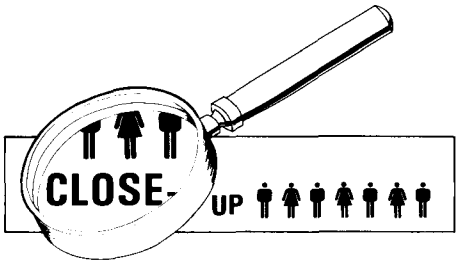
NASA Update

STAY TUNED ...

NASA Update, a bi-weekly news magazine program, will be shown continuously from 8 a.m.-5 p.m. on the closed-circuit TV system and in the following locations:

Bldg. 8 Auditorium—Thursday, April 2 (10:00 a.m.-5.00 p.m.)
Bldg. 8 Auditorium—Thursday, April 16

Check *DATELINE GODDARD and the GODDARD AUDIO NEWS SERVICE* (286-2890) for details.



Congratulations to **GAIL S. WILLIAMS** who was appointed Chief, Procurement Support Division. Her position was established during the procurement reorganization in October 1986.

In this position, Williams will exercise administrative and technical responsibility for that organization's function. Prior to her selection for this position, she was Head of the Contract Support Office/ Procurement Policy Branch.

PAUL R. BRUMBERG is the new chief of NASA Communications (NASCOM). He formerly was associate chief of that division. Brumberg began his NASA career in 1959 at the Johnson Space Center on Project Mercury. He moved to Goddard in 1964. Since then he has served as Chief, Operations Support Computing Division and also as Head, Operations Scheduling Support Branch, both in Code 500.

WINDSOR

R. MORGAN WINDSOR has been reassigned as the Assistant Director of Operations, Office of Flight Assurance. Previously, he was mission manager for Spartan missions. During his 28-year career at Goddard, Windsor has been involved in the design and development of instrumentation systems, subsystems and signal conditioning circuits in support of the Sounding Rocket Program. Among the many positions he has held are: program manager for the Solar Pointing Aerobee Rocket Control System, British Skylark and Australian Sounding Rocket Programs.

Retirees

Best wishes to the following Goddard employees who retired recently!

	Code	Years
Allenby, Richard J.	622	28
Alvord, Edward D. Jr.	470	26
Davis, Anne L.	151.4	33
Kinberg, Aaron	272.1	36
Wren, Paul	531.1	32

***SPACE IMAGERY*—Dr. Nicholas Short, Code 622, presents copies of "Geomorphology from Space," a book that he coauthored. "The best way to study the Earth's natural features is to study its land forms," Short explained as the reason for putting together this collection of Landsat images. This is Short's seventh book which took four years to produce. Left to right: Associate Director Dr. Leslie H. Meredith, Center Director Dr. Noel W. Hinners, Deputy Director John J. Quann and Dr. Nicholas Short.**

***WILD NEIGHBOR*—A buck with eight-pointed antlers poses for a picture by the Goddard woods. Photo by Ed David, Code 712.4**

Goddard Manager Promotes Black Education Through National Ad Campaign

Patricia Lightfoot, Head of the Spacecraft Control Program Branch at Goddard, delivers a message to support traditionally Black colleges and universities in a national ad campaign which will appear in several magazines next month.

Lightfoot joined Goddard in 1966 as a mathematician and has designed and managed the development of ground support subsystems for spacecraft command and control of many Goddard projects.

She graduated from Howard University with a Bachelor of Science in Mathematics. She has a Master of Engineering Administration from George Washington University.

The General Foods Corporation chose Lightfoot to appear in their national campaign. NASA astronaut Ronald McNair also was chosen and participated in the campaign before his untimely death.

Goddard Manager Honored by USSR


FLATOW

Goddard's Search and Rescue (SAR) Missions Manager Fred Flatow was awarded the Yuri Gagarin medal of the the Federation of Cosmonautics of the USSR at the COSPAS/SARSAT Steering Committee in Quebec City, Canada, last month.

The Yuri Gagarin award, named after the Soviet cosmonaut who was the first man in space, was bestowed upon Flatow in recognition of his contribution to COSPAS/SARSAT, an international search and rescue program which uses satellites to locate people in distress. The Yuri Gagarin medal is one of the highest Soviet honors in the space effort.

Flatow joined COSPAS/SARSAT in 1982 as Goddard's Deputy for Search and Rescue Missions. He became Search and Rescue Missions Manager in 1984.

Other U.S. personnel who received the medal are Bernie Trudell, former SAR Mission Manager at Goddard, and Bob Lovell, Communications Division Director at NASA Headquarters.

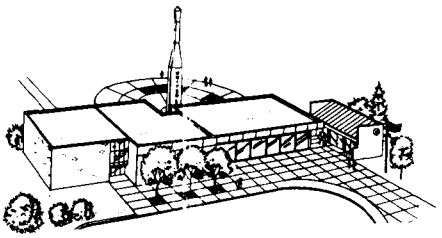
In the United States, COSPAS/SARSAT is operated jointly by NASA, the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard and the Air Force.

The research effort for the U.S. participation in COSPAS/SARSAT is conducted by NASA. The Goddard Space Flight Center is responsible for the execution of the research program.

The United States, Canada, France and the Soviet Union are the principal partners in the search and rescue program. The program has helped save nearly 750 lives.

Goddard Is Looking for a Few Good People

by Darlene Ahalt



Goddard needs volunteers who are at least 18 years old and U.S. Citizens, to conduct general tours at the Visitor Center (VC) in Greenbelt, MD.

Since its inception in 1976, the VC has educated thousands of visitors from around the world. Now, because the VC has undergone major renovations and there are exciting new exhibits to see and learn about, we are expecting even more tourists and need to prepare for them.

If you think you've got what it takes and are willing to sacrifice at least four hours a day, one day a week, Goddard needs you. We want you to help explain Goddard's mission and exhibits, primarily to school groups. If you are selected, you will be trained and provided literature about NASA, Goddard, the VC, and the national space program. NASA volunteers get first hand information from the network of Goddard scientists, engineers and researchers.

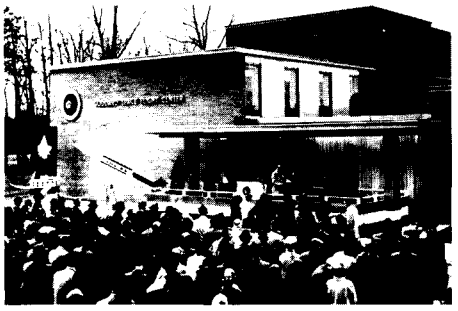
The Visitor Center is open to the public 10 a.m. to 4 p.m. Wednesday through Sunday.

If you want something interesting, challenging and worthwhile to do that uses your talents in public speaking, shows your enthusiasm for American's space program, and an interest in working with students, write Darlene Ahalt, Code 130 or call x 68101, for information and applications.

Milestones

Continued from page 3

new center. Displays of spacecraft and equipment demonstrations were set up, tours of special facilities were arranged, and briefings were held concerning various projects. Hundreds of employees and their families attended, as did members of the press and the general public. Goddard Space Flight Center was officially launched.



***DEDICATION CEREMONY*—The Goddard Space Flight Center was officially dedicated on March 16, 1961 to coincide with the anniversary of Dr. Goddard's first rocket flight. The ceremony took place in front of the newly completed Building 1.**

Balloon Flights

Continued from page 5

from a variety of active regions of the Sun.

The helium-filled balloons are taller at launch than the Washington monument and expand to 28 million cubic feet in volume when fully inflated at float altitude. They carried the 3,000 pound payloads to original float altitudes of 130,000 feet.

The two balloons are manufactured of a newly developed balloon material called Astrofilm and are the first of this type to be used for extended duration flights. These balloons and payloads represented the largest and heaviest ever attempted in this mode of operation.

Balloon tracking was accomplished by the use of two polar orbiting French Argos satellites. Signals transmitted from the balloons every 45 seconds were relayed through the satellites to a ground processing station in Toulouse, France, where the positions were calculated. The position data were relayed to tracking facilities here in the U.S. Four meteorological GOES satellites, parked over the Equator at different longitudes, were used to relay operational and scientific data from the second balloon.

Of Special Interest

Daylight Savings Time will begin almost a month earlier this year than in recent years. Upon retiring on the evening of Saturday,, April 4, you should set your clocks forward one hour. The effective date for the time change is midnight.

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

The GODDARD NEWS is published monthly by the Office of Public Affairs, Goddard Space Flight Center, Greenbelt, MD 20771. Deadline for submitted material is the first of each month. For additional information, contact Randee Exler, 286-7277. The GODDARD NEWS staff is:

Executive Editor.....James C. Elliott
Managing Editor.....Randee Exler
Senior Editors.....Michael Braukus, Carter Dove and Joyce Milliner (Wallops).

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

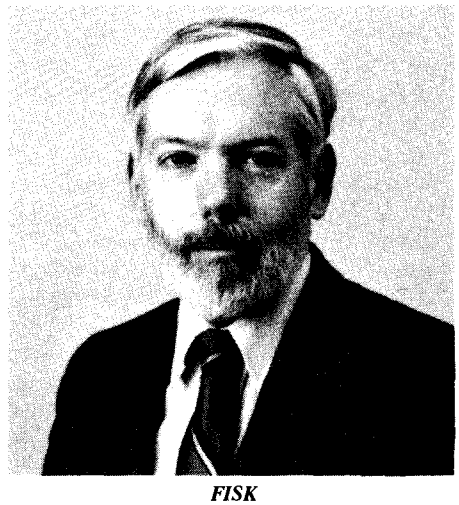
Goddard News

Greenbelt, Maryland and Wallops Island, Virginia

Vol. 33 No. 4 April 1987

DELTA 182 was launched into the late afternoon sky at 5:22 p.m. on March 20 from the Cape Canaveral Air Force Station. Delta 182 carried the Palapa B2-P communications satellite into orbit for the government of Indonesia.

Fisk To Head NASA Office of Space Science & Applications



FISK

A former Goddard astrophysicist has been named NASA Associate Administrator for Space Science and Applications at NASA Headquarters.

Dr. Lennard A. Fisk will be responsible for NASA's space science and applications programs, as well as the activities of Goddard and the Jet Propulsion Laboratory.

Prior to his appointment, Fisk was Vice President for Research and Financial Affairs, University of New Hampshire, Durham.

Fisk joined the University of New Hampshire in September 1977 as an Associate Professor of Physics. In July 1980, Fisk was named project director, Solar Terrestrial Theory Group and in September 1981, he was named Professor of Physics. He continued both these activities in addition to his Vice President duties.

From June 1971 to August 1977, Fisk was an astrophysicist at Goddard. He was a National Academy of Sciences Postdoctoral Research Fellow at Goddard from September 1969 to June 1971.

A graduate of Cornell University, Fisk earned his doctorate degree in applied physics from the University of California, San Diego, in December 1969.

He was secretary of Solar and Interplanetary Physics subsection of the Solar-Planetary Relations Section, American Geophysical Union and Associate Editor, Journal of Geophysical Research, in the early 1980s. He also has served on numerous science advisory panels since 1973.

Fisk succeeeds Dr. Burton I. Edelson, who announced plans to leave the space agency in early spring.

Busse Heads Investigation Board

BUSSE

Goddard's Director of Flight Assurance, Jon R. Busse, has been appointed chairman of the team to investigate the March 26 loss of the Atlas Centaur 67 mission. He arrived at the Kennedy Space Center (KSC), FL. on March 28 to begin the investigation.

Rear Admiral Richard H. Truly, NASA Associate Administrator for Space Flight, announced the composition of the board which will investigate and recommend corrective action for the Atlas Centaur 67 flight failure. The board will report its findings and recommendations not later than May 25, 1987 to Admiral Truly, who will forward them to NASA Administrator Dr. James C. Fletcher.

Continued on page 2

Ten Rockets Launched From Greenland

by Joyce Milliner

NASA successfully launched three suborbital research rockets within 11 seconds recently, concluding a highly-successful international scientific campaign of Sounding Rocket Research conducted from Sondre Stromfjord, Greenland.

Over the past month, ten rockets have been launched successfully from this remote location to investigate the complex interactions between the solar wind and the Earth's atmosphere in the polar cap region where brilliant aurora (northern lights) occur.

This scientific research campaign was the second to be conducted from Greenland during the last three years by NASA, the U.S. Air Force Geophysics Laboratory (AFGL), the Danish Meteorological Institute (DMI) and the National Science Foundation.

In addition to using high-altitude rocket payloads carrying various scientific instruments, aircraft and ground-based observations were included. Five of the rocketborne payloads released harmless chemicals which created artificial ionized clouds up to 300 miles high which were observed by ground observation sites. Of the ten total rocket launchings, eight were sponsored by NASA and two by the Air Force.

The three NASA rockets, launched April 1, included a Black Brant IX, which lifted off at 2:47 a.m. Greenland time, a Taurus-Nike-Tomahawk, which was launched five seconds later; and another Taurus-Nike-Tomahawk, which lifted off six seconds after the second launch.

Scientific collaborators for these three rocket flights were from Cornell University; University of Alabama, Huntsville; Utah State University; Danish Space Research Institute; and the Royal Institute of Technology, Stockholm.

"We received good data from all three payloads, which reached altitudes of nearly 300 miles," explained Warren Gurkin, Head, Sounding Rocket Projects Branch at Wallops Flight Facility. "In fact, all ten rocket flights in the campaign were successful."

The auroral oval is one of the most turbulent near-Earth plasma and is an excellent location for this type of space science research. NASA often uses suborbital rocket vehicles to place scientific payloads where and when required for the scientists to make measurements in the vicinity of active aurora. Mobile tracking equipment had to be established in Greenland to support these rocket flights.

The experience gained from these measurements will be useful in other NASA and European programs involving satellites to study plasma turbulence in the near-Earth space environment using the same type of measurements of energetic particles and electric fields which were made by the suborbital rocket payloads.

Continued on page 8

Investigation Board

Continued from page 1

The Executive Secretary to the board is Robert C. Weaver, Goddard's Associate Chief, Special Payloads, Engineering Directorate. Robert C. Baumann, Goddard Deputy Director, Flight Projects Directorate also was named to the board.

Other members of the board are: Kenneth J. Cox, Johnson Space Center (JSC); William C. Bradford, Marshall Space Flight Center (MSFC); Creighton A. Terhune, KSC; Norman C. Wenger, Lewis Research Center (LeRC); Lt. Col. John Kim, and Col. John W. Allsbrook, U.S. Air Force; Bruce D. Fisher, Langley Research Center (LaRC).

Admiral Truly stressed that the review board is a balanced technical organization with experts in the fields of structures, avionics, expendable launch vehicles and weather and lightning research. None of the board members was involved in the preparation or launch of this particular mission.

The flight of Atlas Centaur 67, carrying the U.S. Navy's Fleet Satellite Communications-6 (FltSatCom-6) spacecraft, ended approximately 51 seconds after an apparently nominal liftoff from Complex 36B, Cape Canaveral Air Force Station, at 4:22 p.m. (EST), March 26, 1987. According to program officials, countdown and liftoff proceeded without difficulty. At about 51 seconds into the flight, the vehicle appeared to have started to tumble and had to be destroyed by the Range Safety Officer. The vehicle was at an altitude of 14,250 feet and downrange from the launch complex approximately one-half mile at the time of destruction.

INTERNATIONAL VISIT **— Government Officials from the People's Republic of China toured Goddard's Get Away Special (GAS) facilities recently. The Chinese government has a reservation to fly two student experiments aboard a Shuttle flight targeted for 1988. Pictured: Larry Thomas, GAS Technical Liaison Officer, GAS Special Programs (right) explains a model of the Northern Utah Satellite which flew in a GAS canister on the Shuttle in 1985 to a delegation from the People's Republic of China at the Visitor Center.**

Chinese Youngsters Reserve GAS Can

by David Thomas

In China, it's no surprise that "many are called but few are chosen." More than 1 billion people populate the east-Asian country, making it the most populated place in the world. Competition for just about everything is stiff.

This is a case where 200 million were called but only two were chosen. China's 200 million youngsters were notified of the chance to develop an experiment to fly on the U.S. Space Shuttle. Seven-thousand proposals were submitted for reserving space in experiment containers in NASA's Get Away Special Program (GAS).

Two middle-school students, Tian Chunliang, 16, and Wang Nianquing, 17, were winners in a year-long nationwide campaign to select the best space experiments for a Shuttle flight targeted for 1988.

"The American judges were deeply impressed by the standard of hi-tech knowledge displayed by the young Chinese students," according to Dr. Mark Lee from the Jet Propulsion Laboratory, Pasadena, CA, now detailed to NASA Headquarters in Washington, DC.

Dr. Lee founded the Association for the Promotion of Science in China (APSC) in December 1985, after the Chinese Astronautical Society in September 1985 showed interest in NASA's GAS program,

Continued on page 3

Gas Can

Continued from page 2

managed by the Goddard Space Flight Center.

Shortly after Lee's organization was formed, the two groups signed an agreement for the contest among the Chinese youngsters.

"The judges chose Chunliang's proposal to test a 'mixture of two non-infiltratable materials and its surface tension in space,' and Nianquing's proposal to test the 'physical disposal of floating garbage in a space-shuttle,' " according to an article in the China Daily Newspaper. The judges said the two winning proposals were "... not only highly creative but of practical value in space science and technology."

The China Youth Daily and the Chinese Science and Technology Daily Newspapers, plus the Chinese Central Control TV are the early sponsors for the experiments.

Lee said the APSC also will honor all 20 finalists whose proposals were chosen from the 7,000. One of the 18 proposals that did not win will be selected as a reserve candidate. The award ceremony will be held in Beijing next July.

Get Away Special is the popular name for the Self-Contained Payload Program of NASA's Space Transportation System. Through the program, individuals and organizations, both private and public, of all countries are given a chance to fly scientific research and development experiments of their own choosing aboard the Shuttle at comparatively low cost.

NASA Update

STAY TUNED ...

NASA Update, a bi-weekly news magazine program, will be shown continuously from 8 a.m.-5 p.m. on the closed-circuit TV system and in the following locations:

Bldg. 3 Auditorium—Friday, May 1
(8:00 a.m.—3:00 p.m.)
Bldg. 8 Auditorium—Friday, May 15
Bldg. 8 Auditorium—Thursday, May 28

Check *DATELINE GODDARD* and the *GODDARD AUDIO NEWS SERVICE* (286-2890) for details.

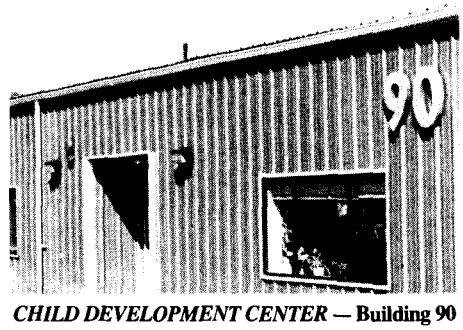
Day Care Center Finds New Home

by Randee Exler

While the children at the Goddard Child Development Center are busy building planets for a paper-mache solar system by day, their parents are spending their after hours and weekends putting the finishing touches on the Center's new building.

The Center moved into its new quarters in February. Parents built shelves, painted, installed room dividers and a ceiling and currently are finishing the food preparation area in the building.

"We're delighted to have everything right here," Goddard Child Development Center Director Barbara Karth explained. Storage for the old facility was located in a separate trailer.



CHILD DEVELOPMENT CENTER — **Building 90 is the new home of the Goddard Child Development Center. A Silver Spring Boy Scout troop plans to build a playground for the children.**

Parents aren't the only ones who have supported the construction of the new building. "There has been tremendous support from both Goddard and the local business community," said Karth. "Everyone did their job plus a little extra."

MAD, Goddard's music and drama club, donated the proceeds from its holiday concert to the Child Development Center.

Winter snow storms halted the construction of the playground, but Charles Douglass, big brother to preschooler Stephanie Douglass, age 3, along with a Boy Scout troop from Silver Spring, have plans to help build a new playground for the children.

Now that the daycare facility has more space, there is room for more children. Since the February move, 17 additional children have been enrolled and another teacher and aide have been hired.

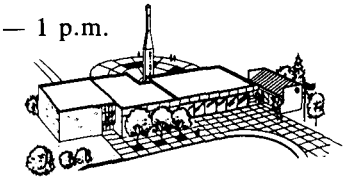
There are other Federal agencies that offer daycare, but Goddard is "quite unique," according to Karth. The Child Development Center is parent-run and is incorporated as a non-profit organization. Parents make all decisions concerning the Center, including the hiring of teachers and aides. The Center celebrates its fifteenth anniversary in June.

The children interviewed liked the new daycare facility from the new ceiling down to the carpet. Daniel Wright, age 5, said, "I like my new school a lot because it's big, and it has a lot of room to play in. I like it because it has a lot of tables. It has nice lockers. We have a lot of animals. I like it because we are studying about dinosaurs, and we have a lot of books."

ROOM TO GROW — **Since the Goddard Child Development Center moved into its their new quarters, 17 additional children have been enrolled. Pictured: Teacher Sue Ready prepares to change the calendar from March to April with the help of one of her pre-school students.**

Visitor Center—May Calendar

May 3 — Model Rocket Demonstration Launch — 1 p.m.
May 9 & 10 — Commemorative Films — 1 p.m.
"Where Dreams Come True"
"Freedom 7"
May 17 — Model Rocket Launch — 1 p.m.
May 24 — Public Program — 1 p.m.
Dr. David Thompson — "A Guided Tour Through the Universe"



The Visitor Center is open to the public five days a week, Wednesday through Sunday, from 10 a.m. to 4 p.m. There is no admission charge.

For more information, call the Visitor Center at 286-8981.

Mailroom Operations Enhanced With New Equipment . . . More Changes To Come

by David Thomas

Suppose you couldn't trash junk mail? Suppose you had to account for every errant envelope, mind every misguided missive and process every piece of postal paper in your mailbox? What if you had to do this not only for yourself, but for, say, about 9,000 people?

You're lucky. You can throw away junk mail which is properly called third class business mail.

Goddard's mailroom can't. It has to process every piece of legitimate mail, plus the junk, received for the 9,300 employees working at Greenbelt.

"We don't throw anything out," says Carol Baker, mailroom supervisor. "We process everything . . . it's our policy."

Interestingly enough, processing over 1,000,000 pieces of mail in the first four months of fiscal '87 is just one part of overall mailroom operations. But it amounts to an average of more than 14,000 pieces of mail daily, including almost 600,000 pieces of internal mail, over 450,000 labels and about 40,000 pieces of research mail, according to Mark Walther, Head, Administrative Support Branch (ASB).

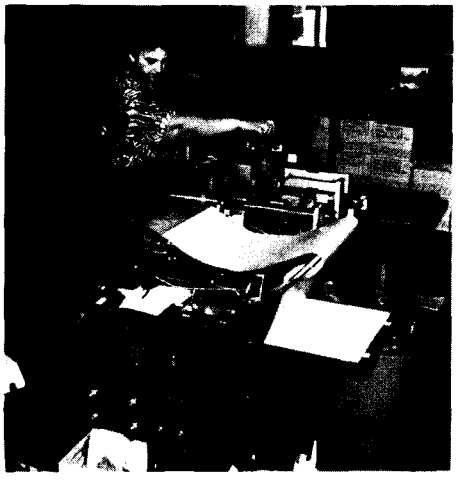
"An operation of this size can never expect to be error free," says Walther, whose task is to ensure smooth operations in the mailroom with an 11-member staff of Dynamics Concepts Inc., contractor employees. "But we have efforts underway to make it more problem-free."

These efforts resulted from a four-month study by Tom Paprocki, an ASB management analyst, who scrutinized mailroom operations with a view toward providing more effective service to the Center. Recommendations and improvements highlighted by Paprocki's report are slated for implementation during 1987.

A new machine slaps on labels faster; new terminals and the Locator and Information Services Tracking System (LISTS) expedite research of uncoded mail; a new address system, scheduled to be operational this summer, will cut back significantly on the frustration of updating mailing lists.

"We could label 4,000 pieces of mail per hour with the old machine," said Marian Roby, distribution clerk. "The new machine can label 15,000 per hour."

Before the new LISTS became available, mailroom clerks Leona Johnson and Tammy Robinson had to reference three different sources to find the correct mail code for mail that arrive uncoded. Now, they simply punch up the employee's name on the LISTS terminal and the corresponding name is found, according to Baker.



LABELING MACHINE — **Mailroom Clerk Marian Roby runs new labeling machine, which triples the amount of work done in same amount of time as old machine.**

Walther said there are 150 distribution or mailing lists on Center. Currently, adding, deleting or changing addresses on these lists is a cumbersome process for users and the mailroom.

"The new address system will allow distribution lists to be updated on-line at a terminal, either by a list holder or a mailroom worker," Walther said.

Soon, Baker said, nearly all equipment will be upgraded, from new sorting bins and weight scales to a single machine that folds letters and inserts them into envelopes—a job that now requires two machines. Walther said even the layout of the office space will be studied to see if it can be enhanced.

"Maybe the new mail bins will come in bright, zesty colors," said Ralph Matthews, as he presorted incoming mail. "I think that'd spruce up things just like the other improvements."

Although Baker was interrupted constantly during the hour-long interview—troubleshooting various problems, like finding the right envelopes for an 11,000-piece mailing job, giving instructions for using LISTS or making sure someone followed proper procedures—she was nonetheless humorous despite her hectic schedule.

As she ambled over in her running shoes after the final interruption, she said: "Think about us the next time you get junk mail."

MAILROOM STAFF — **(left to right) Carol Baker, Marian Roby, Leona Johnson, Michael Willett, Tammy Robinson, Gregory Powell, Deborah Haas, Ralph Matthews, III and Cecile Verkaik.**

Mail your story to the Goddard News (Code 130), or call the Editor at 286-7277.

NASA Hands Over Weather Satellite to NOAA

by Michael Braukus

GOES-H, the geostationary weather satellite launched February 26 by NASA, has completed a month of tests and was turned over fully-operational to the National Oceanic and Atmospheric Administration (NOAA) on Wednesday, March 25 at 10 a.m. EST.

GOES-H, which was designated GOES-7 after reaching orbit, was launched on a McDonnell-Douglas Delta 3924 from Cape Canaveral Air Force Station, FL. GOES-7 is the eighth GOES spacecraft to be launched since 1974 for transmitting cloud cover images from a geosynchronous orbit. In addition to providing cloud cover images and atmospheric temperature profiles (or "soundings"), GOES-7 will collect space environmental data and conduct an experiment for detecting emergency distress signals on the ground from geosynchronous orbit. GOES-7 was built by Hughes Aircraft Co.

NASA flight controllers from Goddard, controlled the spacecraft for four weeks while they checked out the spacecraft's systems and subsystems. This was done from NOAA's launch control rooms in Suitland, Md. and Wallops, Va. Following the turnover, NOAA satellite service flight controllers are operating the spacecraft.

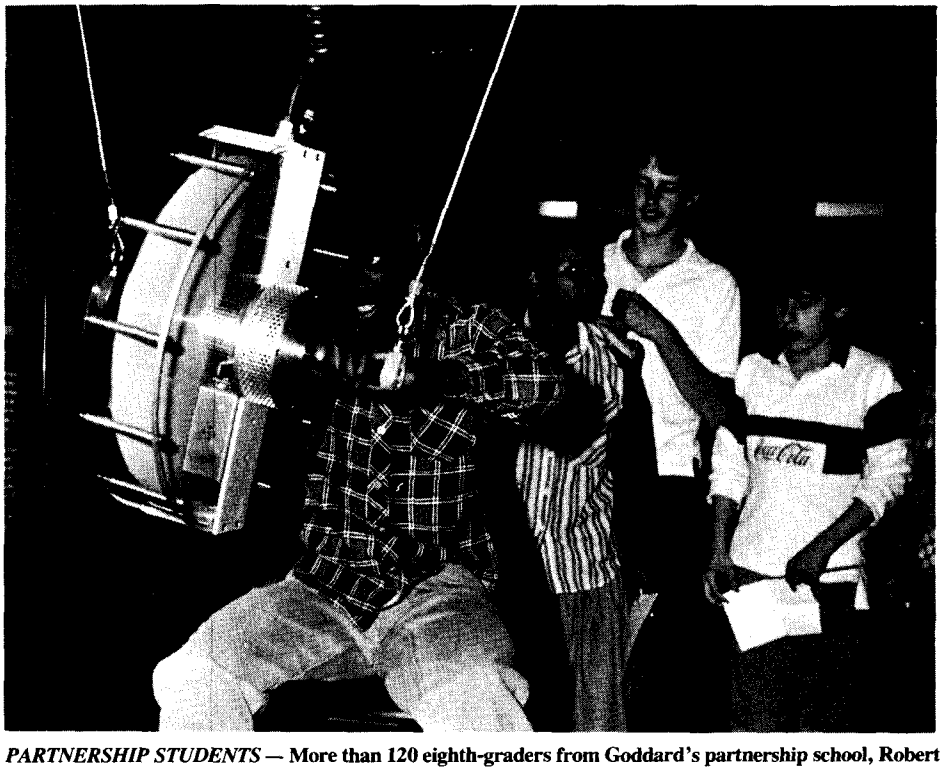
The launch was flawless except for the malfunction of two thermostatically-controlled heaters on the spacecraft's apogee kick motor (AKM). The problem was noticed three hours after launch. Goddard technicians overcame the problem and fired the AKM during the second apogee on February 27, successfully placing the satellite in geosynchronous orbit.

The GOES-7 satellite reached its checkout point at 81 degrees west longitude on March 5. Controllers started to drift the spacecraft toward its permanent location at 75 degrees west longitude on March 18. Drifting at a rate of approximately one degree per hour, GOES-7 reached its permanent station on March 24.

The first full visible image from the satellite was received on March 6. The quality of the image was excellent.

The infrared imagery system, which

Continued on page 8



PARTNERSHIP STUDENTS **— More than 120 eighth-graders from Goddard's partnership school, Robert Goddard Middle School, visited the new exhibits gallery at the Visitor's Center over a three-week period. This event is part of an on-going relationship which, since its initiation in 1984, has included career days, science fairs and a revolving exhibits program. While visiting the new exhibit gallery, Daryl Wooten demonstrated the gyro chair while (left to right) Charmaine Ford, Thomas Littlefield, Joe DiCarlo and Rodney Rumph waited for their turn. The gyro chair is an interactive exhibit which simulates the navigation and control of a spacecraft.**

NEBA Observes 35th Anniversary of Service to NASA

The NASA Employees Benefit Association (NEBA) is now in its 35th year of service to NASA employees.

NEBA now serves some 10,000 NASA employees and has total life insurance in force of more than $800,000,000. Since its inception in early 1952 at the Lewis Research Center, NEBA has paid claims to beneficiaries in excess of $38,000,000.

When Dr. Hugh Dryden, director of the National Advisory Committee on Aeronautics (NACA), signed a contract with NEBA's underwriter (the Home Life Insurance Company of New York, winner from among 33 bidders representing the largest and best life insurance companies in the United States), it marked a first in government group insurance. The plan went into effect 3 years ahead of regular government life insurance, the Federal Employees Group Life Insurance (FEGLI).

When first instituted, NEBA's insurance coverage was provided in amounts from $1,000 to $10,000; today, depending on your age, $23 per quarter will buy you anywhere between $20,000 (over 55) and $65,625 (under 30) of life insurance coverage, including double indemnity, which was not originally available. NEBA also provides dependents and travel protection plans as well as an optional life insurance program enabling NEBA plan holders to take their coverage with them after leaving NASA.

NEBA's charter states that "The association which is established for the sole purpose of providing low-cost group insurance to NASA employees, shall conduct its business for the mutual benefit of its members and their beneficiaries and not for profit." NMI 3870.1D, dated 12/11/81, signed by the NASA Administrator, further explains the purpose and role of the Association.

Thrift Savings Plan Implemented for Federal Employees

Federal employees—both those covered under the old Civil Service Retirement System (CSRS) and those covered under the new Federal Retirement System (FERS)—have a new way to invest in their futures and gain tax-deferred income at the same time through a newly-established Thrift Savings Plan (TSP). The thrift savings plan was established as one of the three parts of FERS.

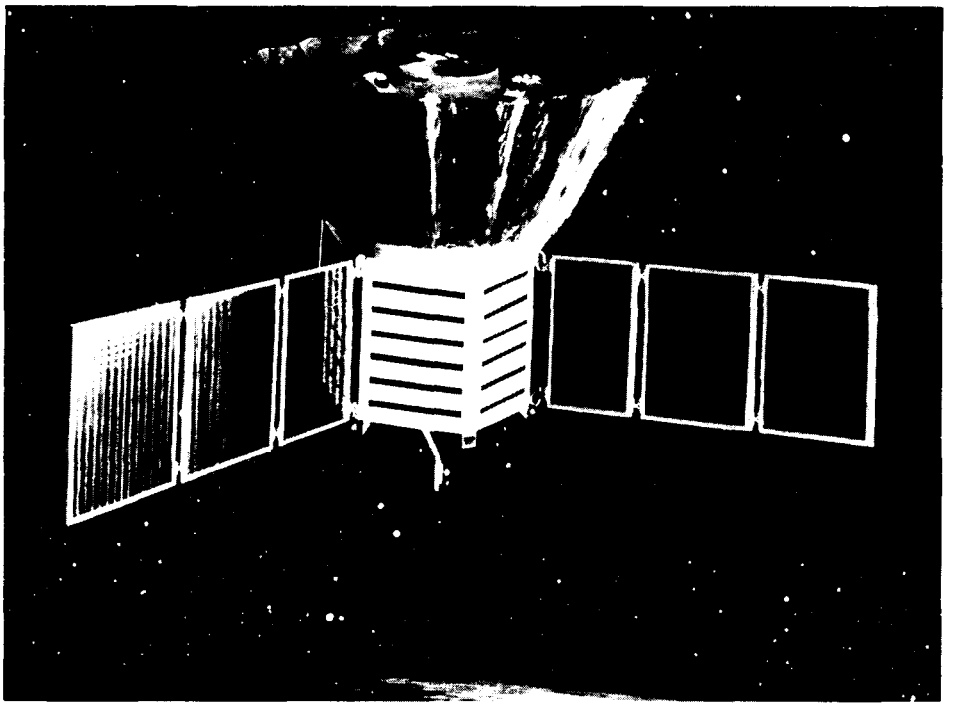
Both CSRS and FERS employees can participate in the TSP. The TSP allows employees to defer taxes, much like an Individual Retirement Account (IRA), but offers additional advantages. For employees covered under the FERS system, the government will automatically contribute 1% of your basic pay—whether you decide to invest or not—into the thrift plan for you. In addition, the government will match your investment—contributing up to an extra 4% of your basic pay. FERS employees can contribute up to 10% of their basic pay to the TSP (15% from April through September 1987). CSRS employees may contribute up to 5% of their basic pay (7½% from April through September 1987), but do not receive any contributions from the government.

Contributions by both CSRS and FERS employees will be invested in government securities in 1987. There is no risk involved in investments in government securities since they are backed by the full faith and credit of the U.S. government. Beginning in 1988, FERS employees will be given other options for investing their money. CSRS employees will not be given any other option.

The decision to participate in the TSP is much like the decision employees have under the Federal Employee Health Benefits open season because employees may opt into the thrift plan, change investments, change contribution amounts, or even decide to stop participation.

For the thrift plan, there will be three open seasons in 1987. The first open season ends on April 30, 1987. The second open season runs from May 15 through July 31, 1987. The third open season from November 15, 1987 through January 1, 1988. For each year thereafter, two open seasons for enrollment and changes of enrollment will be held.

For more information, call the FERS Hotline on X62779.



NEW CONFIGURATION — **Pictured is an artist's concept of the newly-configured Cosmic Background Explorer (COBE) which will launch on a Delta expendable launch vehicle rather than the Space Shuttle, as originally planned. COBE will study the "Big Bang" the primeval explosion that is theorized to have started the expansion of the Universe. It will make a definitive exploration and study of the diffuse radiation of the universe between the wavelengths of 1 micron and 1 centimeter. The diffuse universal radiation found in this IR band (specifically the 1- to 300-micron portion), may contain a large portion, if not the dominant part, of the universal energy content, including radiation from primeval galaxies. COBE will be launched from the Western Test Range, Lompoc, CA, no earlier than early 1989.**

Goddard Gears for Climate and Weather Experiments

by Carter Dove

Just north of Interstate 70 near Manhattan, central Kansas lies the Konza Prairie Natural Area, last of the great tall grass areas of the U.S.

It also is the area which scientists—including a team from Goddard—have selected for an experiment to determine how land vegetation affects climate and weather.

The experiment is known as FIFE, the First Field Experiment of the International Satellite Land Surface Climatology Project (ISLSCP)

The chief objective of the ISLSCP is to develop methods for translating satellite data into information about land surface biological and physical properties, particularly those that interact strongly with the atmosphere.

About 100 scientists now are gearing up for the May 26 start of the first of four field campaigns to take place in the Konza area this year. The scientists—including micrometeorologists, physicists and biologists—will observe the biological and meteorological processes acting near the surface.

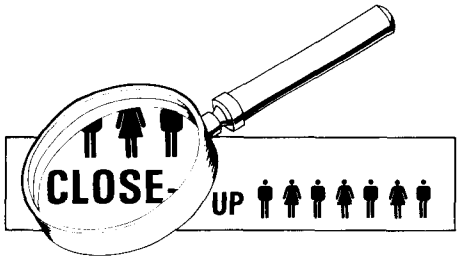
At the same time, five specially-instrumented aircraft and several Earth observation satellites will overfly the site to measure and transmit key data back to Earth.

One of the experiment scientists, Dr. Forrest Hall of the Earth Resources Branch (Code 623) of the Laboratory for Terrestrial Physics at Goddard, said the four "intensive field campaigns (IFCs)" will be conducted throughout 1987 to study the site under different seasonal conditions.

Hall described the IFCs as "periods of intensive surface and aircraft measurements."

During the IFCs, the scientists will obtain measurements on the ground and in the air of the latent and sensible heat fluxes; take airborne measurements of the surface radiation from the visible to microwave wavelengths; collect surface biophysical measurements of the vegetation

Continued on page 8

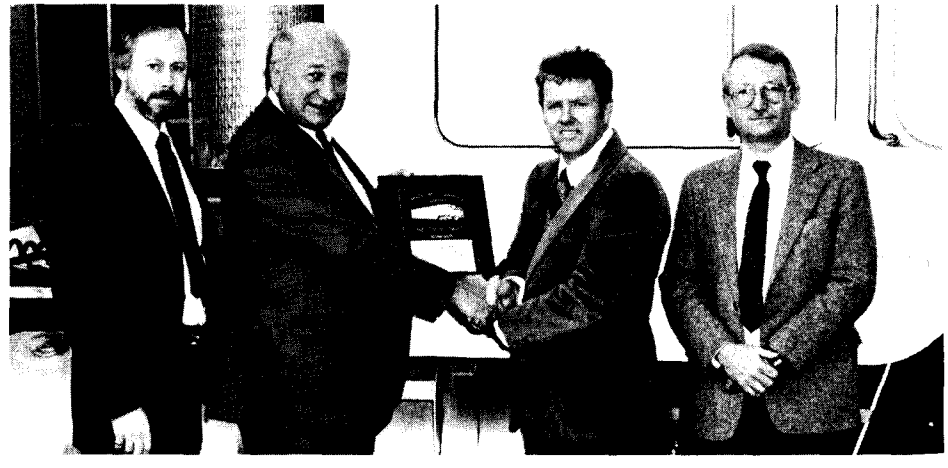


KAESE

Let's welcome **RONALD KAESE** the new Chief of the Health, Safety and Security Office. Kaese succeeds John C. Lemke who went to NASA Headquarters, Office of Safety, Reliability, Maintainability, and Quality Assurance. Kaese comes to GSFC from the U.S. Armed Forces Command in Fort McPherson, Georgia, where he was the Safety and Health Manager. Before then, he was Chief of the Safety Office at the U.S. Army Electronics Research and Development Command in Adelphi, Maryland.

The new head of the Oceans and Ice Branch **Dr. NANCY MAYNARD** comes to Goddard from Scripps Institution of Oceanography of the University of California where she has been working on the use of the Nimbus-7 Coastal Zone Color Scanner in polar regions. Maynard has worked also for the Bermuda Biological Station for Research; Harvard University; in Alaska for both the U.S. Department of Interior and the National Oceanic and Atmospheric Administration; and in Washington with the President's Office of Science and Technology Policy and the National Academy of Sciences.

Goddard's Toastmasters Club has grown from 5 to more than 30 members since it was founded 15 years ago. The club is part of the Toastmasters International Program, an organization whose members develop their communication skills by practicing in a supportive, non-threatening enviroment. New officers were sworn in recently. They are (left to right): Pat Greco, Code 224.2, Sergeant of Arms; Herb Blodget, Code 622, Secretary; Jean Resau, RMS Technologies Inc., Treasurer; Larry Hilliard, Code 727.1, Administrative Vice President; George Griffin, Code 754.1, Educational Vice President; Bob Grigsby, Code 635, President; and Lillian Barker, Toastmasters District D, Lieutenant Governor.

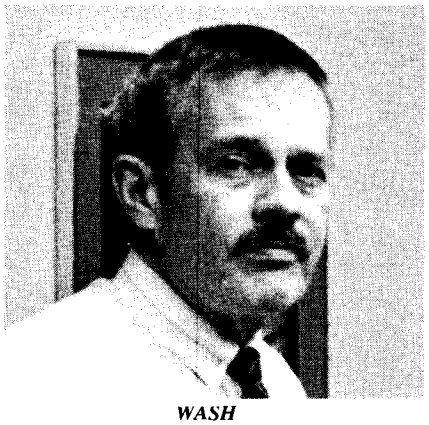


SAFE DRIVER **— Jack R. Long (third from left), driver/technician for the Bendix Field Engineering Corporation (BFEC), Columbia, Md., assigned to the Compatibility Test Section at Goddard, receives the company's first 100,000-mile Safe Driving Award. Participating in the award presentation are (from left) Philip H. Johnson, BFEC vice president, space operations; Murray Weingarten, BFEC president; Long; and Robert R. Stanley, NASA, head, Simulations and Compatibility Test Branch, Mission Operations Division, GSFC.**

Long's award recognizes his "dedication and outstanding accident-free driving record during the period April 1984 through December 1986 in transporting NASA's Compatibility Test Vans (CTVs) throughout the United States." During the award period, Long logged over 100,000 accident-free miles of transporting the CTVs.

NASA's CTVs are 18-wheel trailers, 60-feet long and weighing 80,000 pounds. The vehicles contain electronic equipment valued at more than $3.4 million.

BFEC is responsible for the CTVs as part of the company's contract with GSFC to maintain and operate the Tracking and Data Relay Satellite System.



WASH

In Memorium

Former Goddard Comptroller Charles "Ed" Wash died on Friday, March 27. Wash began his career with NASA almost 30 years ago and recently, after having served as Goddard Comptroller since 1980, had gone to NASA Headquarters to take a position with the Space Station project.

Memorial contributions may be made to the Leukemia Society of America. The address is: National Leukemia Society of America, 1625 I Street, NW, Suite 923, Washington, DC 20006

With your contribution, the following needs to be included:

- The name of the deceased — Charles E. Wash
- His family's name and address — Mrs. Kathy Roth, 4807 Clemons Court, Annandale, VA 22003
- Your name and address.