

TDRS-E: Goddard's Next Major Mission

by Jessie Katz

There's a constellation flying above our heads...composed not of stars but of satellites. The newest Tracking and Data Relay Satellite (TDRS)-E, to be renamed TDRS-5 in orbit, will join the three other TDRSs now in geosynchronous orbit above the Earth in the Tracking and Data Relay System (TDRSS) constellation. TDRS-E is scheduled to be launched this summer aboard Space Shuttle Atlantis on the STS-43 mission.

"It's not possible to operate the NASA space network without the TDRS satellites. The space network is important because it is NASA's primary communications and tracking system for the shuttle, the Hubble Space Telescope and other low-Earth orbiting satellites," according to Philip Liebrecht, Assistant Chief for TDRSS, Networks Division, Code 530.

TDRSS provides satellite coverage from 85 to 100 percent of an orbit, depending on the altitude of the user satellite. The TDRSS satellites currently are positioned 22,300 miles (35,887 kilometers) above the equator. When TDRS-E is in place, the constellation will consist of a TDRS in the west



At 5,000 lbs. (2,268 kilograms), the Tracking and Data Relay Satellite (TDRS) is one of the largest communications satellites ever launched. When fully deployed, its solar panel span is equivalent to the height of a 5-story building. Yet, it is moved by 12 one-pound (.4536 kilogram) thrusters each no bigger than a small human figure.

and one in the east, with two TDRS spares positioned between them.

The most important reason for the STS-43 mission, explains Nicholas Chrissotimos, TDRS Manager, Code 405, is "the fact that in order to keep the network functioning, we have to replenish the satellite

system. TDRS-E becomes a vital part of that system."

The life expectancy of a TDRS spacecraft is 10 years. Chrissotimos notes that aside from an unexpected failure, what controls the TDRS's lifetime is fuel consumption. "The reason why we expend fuel is because the orbit is not perfect, and we have to correct for that. It's called station keeping." TDRS managers wait until there's just enough fuel left to boost the satellite out of orbit and into a super geosynchronous orbit where it is retired.

Two ground terminals, located at White Sands, NM, are responsible for communication with the TDRSs. One terminal began operations in 1983. A second terminal building was dedicated in 1990 and should be operating in 1993. "The main reason for building the second ground terminal was to provide a back-up for the White Sands Ground Terminal (WSGT) and its equipment. The space network is too important to have a single point of failure facility," Liebrecht warns. In addition, growth in user service requirements in the 1990s will keep both facilities busy.

ASTRO Flies Again

When STS-35 launched in December carrying a Goddard astronaut and two Goddard instruments as part of the ASTRO-1 mission, it looked like there would only be one ASTRO mission. But ASTRO-1 was the right name after all, because ASTRO is going to fly again.

The success of the earlier mission and the demonstrated ability of the instruments to acquire high-quality scientific data are among the major reasons for reflight of the ASTRO payload, according to NASA Headquarters.

The major difference between ASTRO-1 and ASTRO-2 is that Goddard's Broad Band X-Ray Telescope (BBXRT) will not be part of the payload. The other three instruments from the first

mission will fly on ASTRO-2. They are Goddard's Ultraviolet Imaging Telescope



SUPERNOVA REMNANT -- This image of the Crab Nebula, the remains of a supernova, was taken with Goddard's Ultraviolet Imaging Telescope (UIT) during the ASTRO-1 mission in December 1990 and released at the American Astronomical Society meeting in Seattle in late May.

(UIT), the Hopkins Ultraviolet Telescope (HUT) and the Wisconsin Ultraviolet Photopolarimeter Experiment (WUPPE).

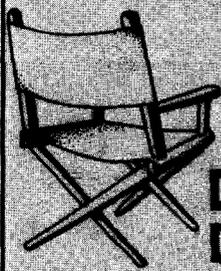
Ted Stecher, Code 680, principal investigator for UIT, noted they did not have a launch date, but said, "We are very excited. We always had planned multiple

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Jeannette Benavides: Cocinera y maestra por el espacio!

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INSIDE



Directors' Dialogue

Q. I often dial x6-NEWS wishing to hear what the Goddard News Service has to tell us (and presumably the public) that day. But almost invariably I would hear nothing but details of the shuttles. How about some real Goddard news, or even general NASA news? I, for one, am tired of the public misconception of the shuttle being THE major thing that NASA does; but now our own "Goddard" news is guilty of that.

A. The Goddard Audio News Service is updated for employees at least once a day (more often during missions and hazardous weather conditions). While the shuttle is often mentioned during the reports, other news usually accompanies it. News of various missions, especially Goddard missions, is also reported, as well as television programs of interest on NASA Select and special presentations or programs occurring on Center that day. Sometimes it may appear that the shuttle is talked about to the exclusion of all else, but often those shuttle reports deal with missions carrying Goddard payloads. We are also putting more "real Goddard news" on the Goddard Audio News Service, but do not want it to serve as a duplicate Dateline Goddard. If anyone has information they want announced throughout the Center, they can call Dateline Goddard, at x6-8955.

Jan Ruff, Chief
Office of Public Affairs
Code 130

Space Travel Trivia

1. After the United States, Soviet Union, and the European Space Agency, what country has had the highest number of successful orbital launches.
2. According to those who should know, the astronauts that is, it's the only man-made feature on Earth that can be seen from space.

ANSWERS:
1. Japan
2. The Great Wall of China

Chemical Explosion Shakes Goddard

by Susie Marucci

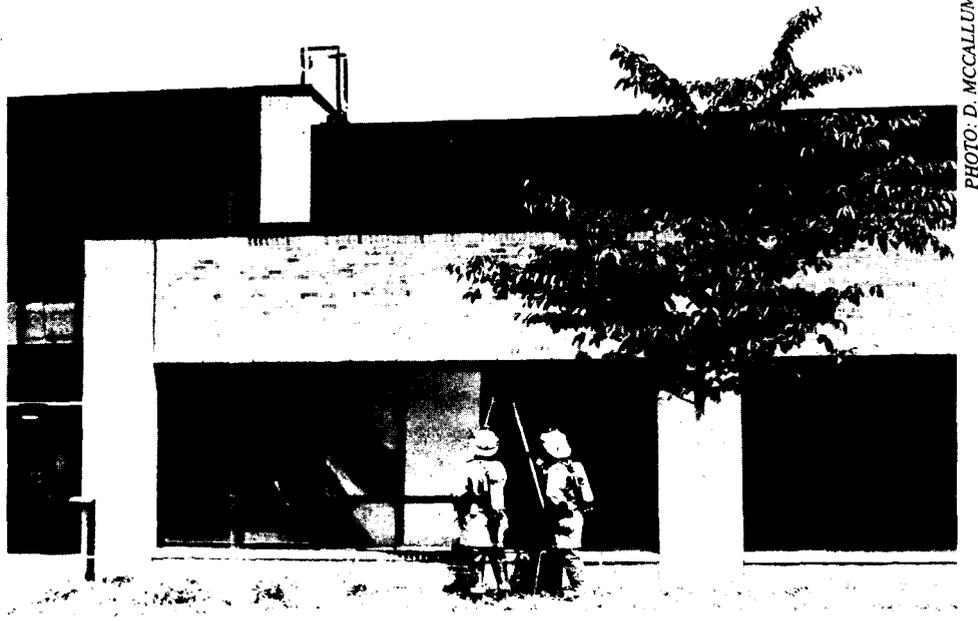


PHOTO: D. MCCALLUM

NOT BUSINESS AS USUAL -- From outside Building 2 the window was the most obvious sign of the explosion that took place on the afternoon of May 24. Two members of the Prince George's County Fire Department broke away glass from the blown-out window. Two men working on an experiment which used chlorine dioxide were injured in the explosion.

Many people who heard the sirens thought there had been another accident on Greenbelt Road. But those who heard the blast knew better. Two men were injured in a chemical explosion in Building 2 on May 24. They were taken by helicopter to Washington Hospital Center.

The helicopter waited at Goddard to take the men to the hospital. Because chemicals were involved, decontamination procedures were followed to make sure there was no chemical risk to the helicopter crew, passengers or to the emergency room staff upon arrival at the hospital. The emergency responders were in contact with the hospital during the time they were at Goddard.

Dr. Louis J. Steif, Code 691, suffered minor splash burns and glass cuts. He was treated and kept overnight for observation. He was released the next day. Dr. Fred L. Nesbitt, a contractor with Catholic University, had glass cuts and burns to his upper body. Nesbitt was released June 6th. According to Health, Safety and Security Chief Ron Kaese, Code 205, Nesbitt "appears to be in good spirits."

The two scientists were working with chlorine dioxide, a highly sensitive chemical, when the explosion occurred. The exact cause of the explosion has not been determined. Chlorine dioxide is found in the polar stratosphere and is associated with chlorofluorocarbons (CFCs) which are implicated as a cause of stratospheric ozone depletion.

In addition to the helicopter, a number of Prince George's County fire fighting and emergency medical units arrived at Goddard to help with the accident. As in all serious accidents, an Accident Investigation Board was appointed to look into the explosion. Associate Administrator Dr. James Trainor is chairperson. The board, which is made up of a chairperson, two members, two technical consultants, four advisors and a union representative, will issue a final report upon completion of its investigation.

If an emergency should occur, not necessarily an explosion, there is a special emergency number to call. To report an emergency dial 112.

Launch Update: SSBUV

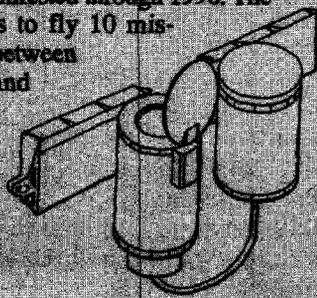
The Shuttle Solar Backscatter Ultra-violet (SSBUV) instrument will head for space on its third trip aboard a space shuttle when it is launched with the Tracking and Data Relay Satellite (TDRS)-E aboard the Space Shuttle Discovery on the STS-43 mission. STS-43 is currently scheduled for a late July launch.

When the Goddard News went to press, the SSBUV was at the Kennedy Space Center, FL, finishing its pre-integration test. The SSBUV should be shipped to the Orbiter Processing Payload Facility on June 10. Once the payload is installed in the orbiter, the integration verification test will be run. Upon its completion, the SSBUV will sit snugly in Discovery until launch.

The SSBUV was developed by NASA to calibrate similar ozone measuring space-based instruments on the National Oceanic and Atmospheric Administration's TIROS satellites (NOAA-9 and -11) and NASA's NIMBUS-7.

The SSBUV uses the space shuttle's orbital flight path to assess instrument performance by directly comparing data from identical instruments aboard the spacecraft, as the shuttle and the satellite pass over the same Earth location within a one-hour window. These orbital coincidences can occur 17 times a day.

The previous SSBUV flights occurred on STS-34 in October 1989 and STS-41 in October 1990. Five more flights are manifested through 1996. The goal is to fly 10 missions between 1989 and 2000.



ASTRO Flies Again

(Continued from page 1)

flights until last year [when shuttle costs rose and some payloads had to be cut.] Then we did so well they put us back in."

The astronauts for this mission have not been chosen yet. Goddard Astronaut Ron Parise, Computer Sciences Corporation, one of the seven astronauts on the first ASTRO mission, may fly on ASTRO-2.

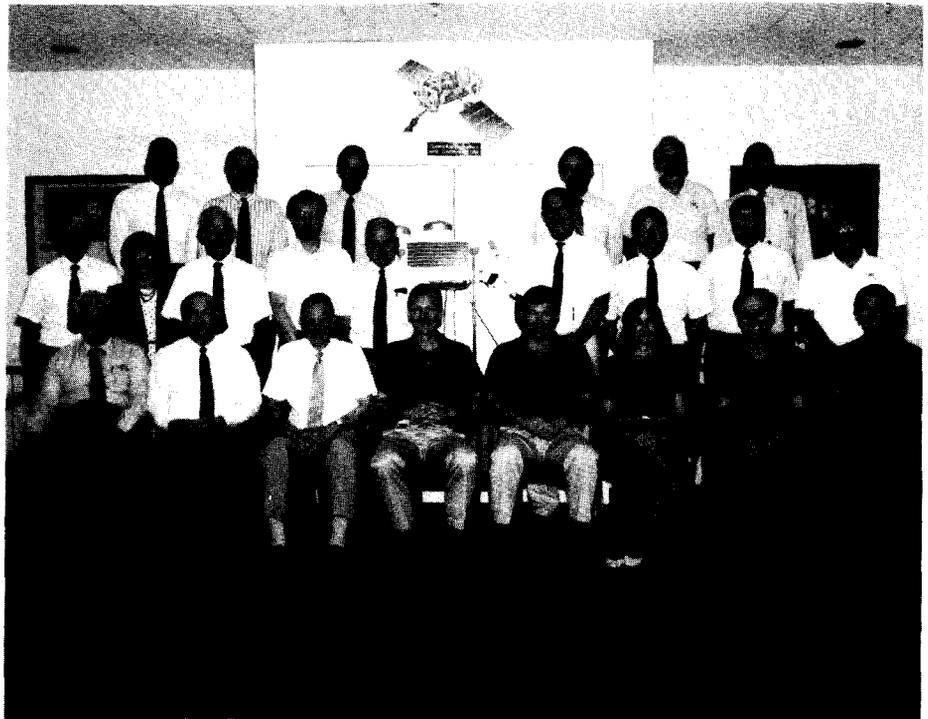
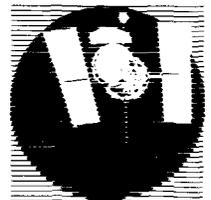
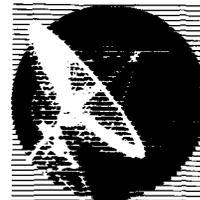
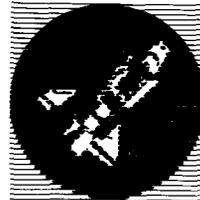
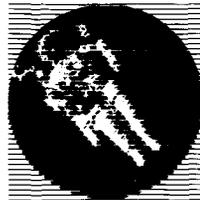


PHOTO: D. MCCALLUM

THE GRO TEAM: The STS-37 astronauts, who flew the space shuttle mission to deploy the Gamma Ray Observatory (GRO), launched April 5, visited Goddard to present awards to the GSFC GRO team. Pictured, all from Code 403, except where noted, left to right, standing, in the back row, are Jeff Slade; Steve Metcalf; Bob Markley; Rick Stickle; Marty Davis, Observatory Manager and Rick Berry. Standing, in the second row are Dr. Don Kniffen, Project Scientist, Code 662; Amethyst Sharp; Chuck Rhoades, Deputy Project Manager for Resources; Bob Ross, Systems Manager; Gene Humphrey; Karl Schauer, Mission Operations Manager; Bob Miara; Jack Ellis and Jerry Youse. In the front row, seated, are Jerry Madden, Project Manager; Tom LaVigna, Deputy Project Manager; John Hrastar, Acting Project Manager and the astronaut crew--Commander Steve Nagel; Pilot Ken Cameron; and Mission Specialists Linda Godwin; Jay Apt and Jerry Ross.



Greenbelt Visitor Center Events for July

Summer is here and the Visitor Center changes its hours. Beginning July 4 and continuing through Labor Day the Visitor Center will be open seven days a week. The hours are 10:00 a.m. to 4:00 p.m., closed all federal holidays. For more information call x6-8981.

Launch Site Goddard -- Sunday, July 7, 1:00 p.m. and July 21 from 10:00 a.m. to 3:00 p.m. On July 21 the expanded rocket launch is the 10th Anniversary Model Rocket Contest Commemorating the 22nd Anniversary of the Apollo Moon Landing.

Saturday Videos -- Saturday, July 13, 1:00 p.m. View "STS-31 Post Flight Press

Conference." The Hubble Space Telescope (HST) is one of the most talked about observatories of the space program. Shuttle astronauts Loren J. Shriver, Col. USAF; Charles F. Bolden Jr., Col. USMC; Bruce McCandless II, Capt. USN; Kathryn D. Sullivan, PhD.; and Steven A. Hawley, PhD. star in the video, which shows the highlights of the mission, including deployment of the HST.

Know and Tell -- Sunday, July 14, 1:00 p.m. "The First Pictures from NASA's Hubble Space Telescope (HST)" -- Join Dr. Chuck Wende from Goddard's Office of the Associate Director of Flight Projects for HST as he talks about the first year of HST.

Goddard to the Rescue for Second Pegasus Launch

by Susie Marucci

Today's society is fast-paced. Life today seems to be built around the fact that people don't have much time. But not everything is made quickly. So what happens when an organization is getting ready for a launch and needs a structure to hold its satellites - fast? Why they call Goddard, of course!

That's what happened in March when the Defense Advanced Research Projects Agency (DARPA) called Goddard. When the second Pegasus is launched in early June, the payload will be seven microsats, or mini-satellites. A carriage structure built for DARPA to carry seven mini-satellites was having problems in vibration qualification testing. The DARPA carriage was tested twice and broke twice. DARPA officials were concerned they would not be able to meet their launch date. So DARPA officials asked if Goddard could help out. They wanted a back-up carriage structure to hold their microsats.

The job was given to the Special Payloads Division. Gary Sneiderman, Code, 741.1, an aerospace engineer, was in charge of building the carriage. He had a plan to build the back-up carriage, qualify it and deliver it to DARPA. But with a catch. The project was given to Sneiderman on April 1. It had to be ready for the launch, which was then scheduled for May 30. So the

structure had to be built in less than eight weeks. Sneiderman got a group together, including General Electric Government Services to perform the assembly. Several

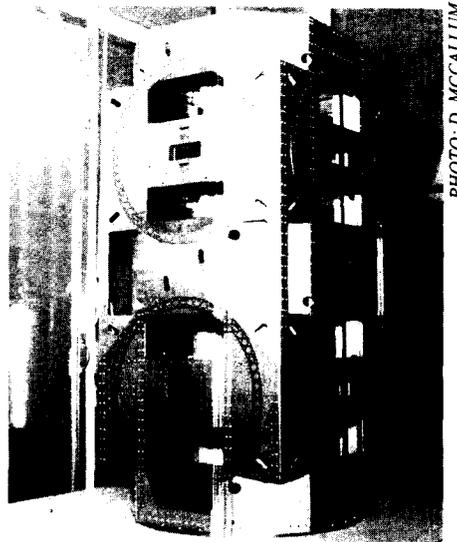


PHOTO: D. MCCALLUM

HOW MANY SATELLITES CAN ONE CARRIAGE TAKE? -- The answer, in this case is seven. This microsat back-up carriage, was a rush job. Goddard's carriage was built and tested in less than the eight weeks required by the contract. The 44 pound carriage has more than 350 parts and 10,000 rivets.

of the people involved also worked on the Pegasus satellite, which was deployed on the first Pegasus launch in April 1990. Pegasus is a 50-foot rocket launched from a B-52.

The completed structure weighed 44 pounds and had more than 350 parts and 10,000 rivets. It was delivered to Goddard by General Electric on May 14 for testing. Not only did it pass the tests with flying colors, but also, it was ahead of schedule. Part of the qualification testing was based on actual data from the first Pegasus launch. "The structure was tested to very severe levels," Sneiderman said. "We wanted to show this thing can absolutely, without a doubt, withstand the stresses of a launch." And it passed.

But while the back-up carriage passed its test and is ready to fly, Sneiderman doesn't know if it will be used. While Goddard was building a back-up carriage, DARPA's microsat carriage was being worked on, and passed its third test. Sneiderman thinks it is likely that his "baby" will fly eventually. And even if it doesn't fly this time, being in control of a last-minute project like this was a new experience for Sneiderman, and he enjoyed it. "It was a great learning experience. I'd love to do it again."

Special Goddard Program Helps Aspiring Engineers

by Susie Marucci

For any group of students in a university engineering program life is not easy. Some students will drop out or take more than four years to graduate. The national average shows that 60 percent of entering students who complete engineering programs take approximately 4.7 years to do so. This occurs because curricula and pressures are intense.

One group of students studying engineering at Morgan State University (MSU), Baltimore, MD, beat the odds: 70 percent of them graduated on May 19, 1991, in just four years, with more than half earning degrees in engineering or physics. They are members of the Engineering Enrichment Program, a program sponsored by Goddard.

Since its inception in 1985, Goddard's Engineering Enrichment Program has worked with Morgan State University, one

of the nation's 107 Historically Black Colleges and Universities (HBCUs). The program takes 20 students who have just completed high school and who have already been accepted into the School of Engineering at MSU. It gives them six weeks of intensive training in math, physics and english. This episode gives the students their first real experience away from home. It also gives them a gift most new students do not get -- time to become accustomed to life at a university. That time, and the whole program, can make a difference to a student's success in college.

The Engineering Enrichment Program only lasts six weeks, and Goddard does not play a role in the rest of the students' education, but those six weeks make a big difference. The Engineering Enrichment Program acts as a kind of glue, bringing the students together, encouraging study groups

and reinforcing the need to work together.

The Class of 1991 began as the Engineering Enrichment Program Class of 1987. Dillard Menchan, Code 120, Chief, Goddard's Equal Opportunity Program Office, thinks they are a very special group. "Whenever one of them would think about giving up, the others were there to help. They kept each other going throughout the program."

"The story of the Engineering Enrichment Program's Class of 1987 is a success story," said Menchan. Not only did 70% of the original students graduate this year - and two more will graduate next year - this group produced the valedictorian for Morgan State University, an unusual honor to befall an engineering student. According to Menchan, 70 percent is a phenomenal rate of graduation, especially for a group composed primarily of minority

(Continued on page 8)

Goddard Library Celebrates 30 Years

by Susie Marucci

Books, journals, disks and helpful people, all of these are part of the equation that equals a vibrant, working library. Goddard is very fortunate to have such a library. That was the message the week of May 13 - 17 when the Homer E. Newell Library celebrated its 30th anniversary.

During the four day celebration there were posters and large displays of current and upcoming missions, including the Gamma Ray Observatory (GRO) and the Upper Atmosphere Research Satellite (UARS). There were also displays including black and white photographs showing GSFC in its early years, displays of Goddard projects, facilities, people and special events going back to before some of the younger employees were born.

The big event in the observance of the library's anniversary, was a special program entitled "Perspectives on the Goddard Library: Past, Present and Future." Center Director Dr. John Klineberg opened the program giving a history of the library, from its beginnings in 1959, before the library opened, when scientists who would eventually be coming to Goddard began collecting reference materials and storing them in temporary locations. The library officially opened in May 1961 in Building 1 with a collection of 6,000 books and journals. (Today there are more than 82,000 books and 52,000 journals.) Dr. Klineberg closed his comments by saying, "To all of you, I hope you are going to take tremendous pride in the accomplishments over the past 30 years and think hard about the many challenges we have to face in the future, and we'll do so with greater understanding and capability thanks to this library."

Janet Ormes, Code 252, head of the library since 1987 introduced the speakers. Dr. Frank McDonald, Goddard's Former Associate Director and Chief Scientist spoke of the value of the library. Cosmic Background Explorer (COBE) Project Scientist Dr. John Mather, Code 685, talked about how he used the library during the building of COBE. Mather said, "I stopped in here virtually every week to check up on the latest technology developments in cryogenic engineering and infrared technology, which

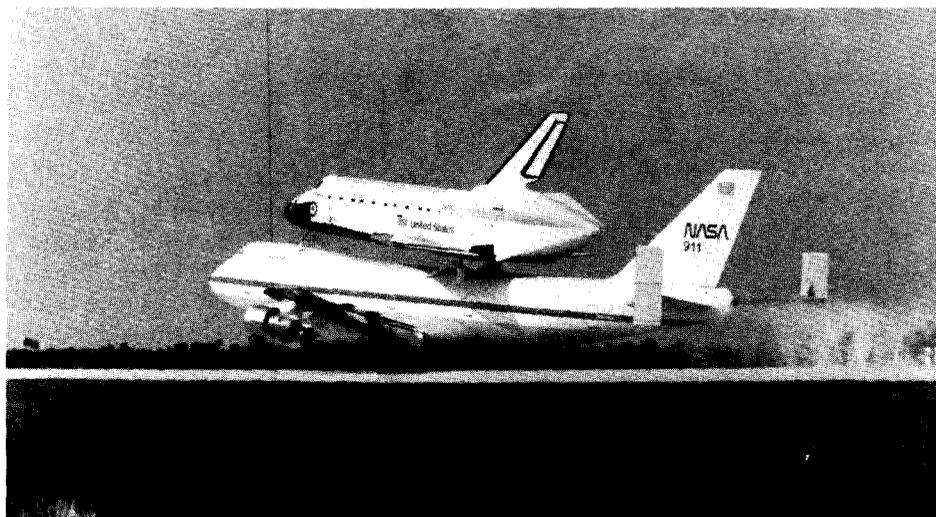
were so essential to the COBE mission."

Walter Truszkowski, Code 522.3, a member of the GSFC Library Council, spoke of the future of the library.

Two special guests present at the celebration were John Weaver and Adelaide Del Frate. Weaver was the head of the Goddard library from its beginning to 1968, Del Frate was head of the library from 1969 until 1987. Del Frate was given a plaque signed by library staff members from all the NASA libraries.



30 YEARS AND STILL GOING STRONG -- The 30th Anniversary Celebration of the Goddard library -- the Homer E. Newell library, was a four-day affair with a special program about the past, present and future of the library. Shown in the photo, are from left: Center Director Dr. John Klineberg; Janet Ormes, Code 252, head of the library; John Weaver, head of the library from its opening in 1961 to 1968 and Adelaide Del Frate, head of the library from 1969 to 1987.



THAT'S QUITE AN ENDEAVOUR -- The newest addition to the space shuttle orbiter fleet, Endeavour, touched down at Kennedy Space Center, FL, on May 7, 1991. Endeavour flew to its new home atop the new Shuttle Carrier Aircraft, also making its landing debut at KSC. For the first time since January 1986, a full complement of four orbiters are now at KSC. The maiden flight of Endeavour is scheduled for May 1992.

INSIDE

Jeannette Benavides: Cocinera y maestra por el espacio! (Jeannette Benavides: Chef and teacher for space!)

by Cheryl Madison

For Jeannette Benavides, Code 313, cooking up a concoction is her passion, be it in her kitchen or her laboratory. She is a chef at home and a chemical engineer in the Metals Section, Materials Branch of the Office of Flight Assurance. Petite and perky, she wields a mortar and pestle to grind herbs to add to her Spanish paella or to crush materials to analyze in her various instruments that determine chemical composition. Every summer, Benavides brews an especially spicy office concoction--a mixture of students from various Goddard summer programs.

Benavides is an interesting concoction herself--a native of Costa Rica, where her family (mother, father, two sisters, and one brother) still resides, and where she and her husband hope to retire. She is an American citizen and has been since 1986.

In 1975, Benavides received her B.S. in Physical Chemistry from the University of Costa Rica in San Jose. She came to the United States when she received a fellowship from the World Health Organization to do research in Washington, DC, for the Food and Drug Administration on microtoxins (potent carcinogens). She continued her studies at American University, Washington, DC, where she received her M.S. in Physical Chemistry in 1982. After a brief sojourn back to Costa Rica to do research, she returned to American University to work on her doctorate. She has completed her PhD courses and is writing her dissertation.

While pursuing her doctoral studies, Benavides worked for the Food and Drug Administration and wistfully watched the beltway "Goddard Space Flight Center" sign whiz by. She sparkles, "Wow! I have always wanted to work for NASA because I have always been fascinated by space." According to Benavides, Costa Ricans are vitally interested in space. Astronaut Franklin Chang-diaz and Goddard's Benavides are considered space heroes and are the frequent subjects of national news articles.

CHEMICAL ENGINEER

Benavides joined Goddard in 1987. She describes her job in the Office of Flight Assurance as ever-changing and challenging. "Our materials branch is a team," she explained. "Each of us contributes our expertise to troubleshoot and solve a problem together. We use the same tools in our work, but our tasks for each flight project is different."



PHOTO: D. MCCALLUM

Jeannette Benavides, Code 313, a chemical engineer in the Materials Branch of the Office of Flight Assurance, is working with the Sample Vacuum Chamber of the Argon Electron Spectroscopy unit, one of the tools she utilizes to determine the chemical analysis of a sample.

For the Gamma Ray Observatory, she studied the faulty nickel cadmium battery plates to determine their chemical composition. For Hubble Space Telescope, she studied the discolored stainless steel heat pipes for the cooling system. Chemical analysis of the surface of the pipes showed that cleaning solvents actually were contaminating the instruments.

Besides working with her 40 person team to troubleshoot problems in flight projects, Benavides and her teammates have individual research projects they must develop by the end of each year. These assignments will help all flight projects in the future. Her study this year is the diffusion of nickel through gold plating on connector pins, unique research in relation to flight projects. Also, Benavides must keep researching her dissertation on polymers, complex chemical compounds, which she regrets she has relegated to the back burner for now.

MENTOR

As if her job itself were not enough, Benavides is a mentor, and has participated in the Summer High School Apprenticeship Research Program (SHARP) since she began work at GSFC. Last year, she volunteered to mentor three students--one SHARP, one co-op, and one from Spelman University in Georgia. "It's crowded in our offices or I would mentor many more students," she explained. "Space is my only worry, we're elbow to elbow." She feels that the students are enthusiastic and fast learners.

As a mentor, Benavides assigns individual projects to the student and gives

them the responsibility to carry out experiments and report conclusions. "It's refreshing. In many instances I explain the goals of the research and they come up with ideas I've never thought of."

She smiles, "What I have to invest in time and effort in teaching is never wasted. I learn so much from my students, and I am so rewarded by their growth and by the knowledge that I have helped to instill the competence and self-confidence in their ability that is evident in their final presentations."

This summer, Goddard is beginning the twelfth year for SHARP. The purpose of the program is to encourage student minorities, a group now underrepresented in the technical work force, to consider a technical career. One hundred percent of all SHARP participants have gone on to college after high school, and to date, all have remained in college to earn bachelors degrees. Many have continued in graduate studies. Seventy-five percent of Goddard's SHARP participants have majored in technical fields in their university studies. Benavides urges, "I encourage all of Goddard to participate in the mentoring process, no matter what program."

When asked about her plans for the future, this Bowie resident talks about her husband and her daughter. Then, her mind turns back to work as she beams, "I want little by little to contribute somehow, from my mind, an idea that will be good for the space program. I want to grow, to achieve, and to contribute more as I learn more. I have no interest in working anywhere else except at Goddard." She smiles, "My job is totally satisfying; I have the opportunity to teach and to do research."



Congratulations to the following employees on their recent appointments: **JAMES ZEREGA**, Deputy Project Manager for Resources for the Earth Observing System (EOS) Observatory Project, Code 421...**DRAKE DEMING**, Head of the Planetary Systems Branch,



PHOTOS: M. SMALL

ZEREGA

KAO

Code 693.1...**VICKI OXENHAM**, Head of the Project Operations Branch, Code 513.....**DR. ROSA KAO**, Assistant Chief for Scientific Computing, Code 970...Congratulations to **SABRINA WILSON**, a Summer High School Apprenticeship Research Program (SHARP) student, who recently was awarded the \$52,000 Paul Robeson Scholarship. Wilson has participated in the SHARP program at Goddard for two years. Goddard welcomes **MARY CLEAVE**, new Deputy Project Manager for SeaWiFS, Sea Viewing Wide Field Sensors, Code 970.2. Cleave comes to Goddard from Johnson Space Center, Houston, TX, where she was an astronaut. Cleave flew on two space shuttle missions STS-61B in 1985 and STS-30 in 1989. Congratulations to the 20 employees who represented Goddard at the most recent Manned Flight Awareness Launch Honoree activity at Kennedy Space Center, FL. The honorees were **RAYMOND H. BEADLING**, Bendix Field Engineering Corp. (BFEC); **RICHARD D. BECKMAN**, BFEC; **LINDSLEY D. BODDEN**, Computer Sciences Corp. (CSC); **ARTHUR J. BRADLEY**, Allied Signal Corp.; **CLIFTON P. BRIMER**, Code 833; **DAVID R. BROWN**, BFEC; **THOMAS M. BUCHANAN**, BFEC; **ROBIN L. CARROLL**, Code 554; **DALE E. COLE**, BFEC; **OSVALDO O. CUEVAS JR.**, Code 553; **KEVIN M. DAVIDSON**, BFEC; **JAMES F. FORTUNA**, CSC; **DEBRA L. FROSTROM**, Code 832; **GLENN W. GARNER**, Loral AeroSys; **STANLEY P. HOUCK**, CSC; **RICHARD A. KROGEL**, RMS Technologies, Inc.; **HARRY C. PRITCHETT**, Code 534; **CHARLES A. SCAFFIDI**, Code 510; **ROBIN R. SCHERMERHORN**, CSC and **FRED M. WITTEN**, Code 745.

IN MEMORIAM

DICK BORIG 1932 - 1991



Richard R. "Dick" Borig Sr., Code 440, a member of the Space Telescope team since October 1982, died May 24 after suffering a heart attack on May 22. Borig was serving as the Hubble Space Telescope (HST) representative at Lockheed Missile and Space, Co. in Sunnyvale, CA, when he was stricken. He had suffered a previous heart attack in November 1987.

Borig went to Lockheed in October 1990 and coordinated all HST activities with the company including the logistics, procurement, mission planning, quality control and documentation. Before going to Sunnyvale, he had worked as the HST Project Support Manager (PSM) since joining the HST team. Borig had been with Goddard since 1970. His other positions at Goddard included computer systems analyst, configuration management specialist, PSM for Code 200 and PSM for the Solar Optical Telescope (SOT).

DONALD V. BEALL 1934 - 1991

Donald V. Beall, president of the NASA Federal Credit Union, died at his home on June 4. Beall had been president of the credit union since 1965. He had been a life-long active member of the credit union movement and in 1990 was a member of a technical team to establish credit unions in Poland. He was presented with a special citation from the World Council of Credit Unions on June 1, 1991.

Retirees

Congratulations to the following employees who recently retired!

Name	Code	Years	Name	Code	Years
Walter Allison	735	34	Eugene J. Maier	910	31
John T. Bowerman	716	29	Raymond Melcher	683	37
Jimmy Cooley	403	30	Robert I. Miller	515	33
James W. Kunst	440	32	Paul L. Spadin	726	33
Keith F. Flemming	683	31	Robert L. Tanner	933	37
Stanley C. Freden	600	24	Roswell Stonebraker	523	26
Marie C. Kiley	701	15	Mary Watts	212	30

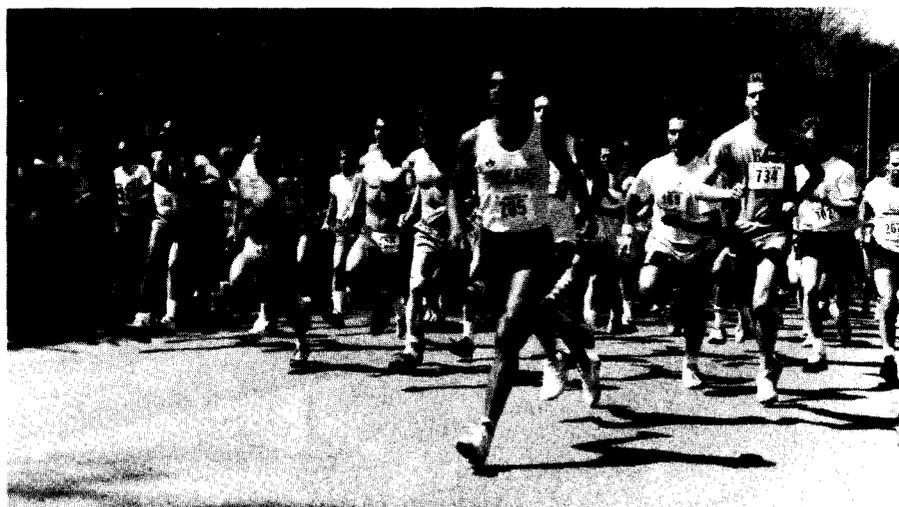


PHOTO: D. MCCALLUM

FUN RUN IS JUST THAT - A FUN RUN -- The 31th Intercenter Fun Run took place recently with runners taking over the streets during the middle of a busy work day. The two-mile Fun Run was designed to show pleasant competition between centers and to promote health and a good time. This photo shows some of the 695 people who started the race including number 400, Ed Bogges, Code 685.9, who won the race with a time of 9:46. Second and third places were won by Mark Baugh, Code 724, number 205 and Richard Bingham, Code 271.4, not shown. Their times were 10:35 and 10:53, respectively. The first place women's finisher was Lani Williams, Advanced Technology and Research, Inc., with a time of 13:54.

CENTER OF Lines

GODDARD OPENS ITS DOORS TO SMALL AND SMALL DISADVANTAGED BUSINESSES -- Fourteen hundred companies signed up for Goddard's 18th Annual Small Business Conference held in the Building 8 auditorium. The crowds started arriving before the 9:00 a.m. opening of the conference. They talked to employees from every directorate about possible work opportunities. More than 10 of NASA's major contractors were also on hand to answer questions and take information for possible work. The small and small disadvantaged businesses were not limited to local companies; at least one company from Oklahoma sent a representative. This year's attendance was more than double that of last year.

A NEW GENERATION FOR SPACECRAFT -- Twenty students from Laurel High School visited Goddard May 17 as part of the Cooperative Satellite Learning Project. The students are learning about the Small Explorer (SMEX) spacecraft. They met with Orlando Figuero, Code 701, SMEX project manager, and Charles Clagett, Code 745.1, SAMPEX (Solar, Anomalous, and Magnetospheric Particle Explorer) lead hardware engineer for the Attitude Control System. While they were with Clagett, they saw the Spacecraft Integration Facility in Building 5, with a mock-up of SAMPEX.

The students also saw the Engineering Test Unit Integration and Test Laboratory in Building 11 and met with Robert Patschke, Code 743.3, SAMPEX integration and test manager, who performed a test from a test conductor workstation commanding part of the power subsystem to turn on another subsystem and verify that it worked properly.

Michael Fatig, Flight Operations Manager, Bendix Field Engineering Corp. is the creator of the program. He is also a graduate of Laurel High School and spends his time as a volunteer working with the students.

During the morning's activities, he presented a check for \$1,500 to Doris A. Eugene, member of the Prince George's County Board of Education. The check, the first of several, was to support the students' activities involved with the learning project.

Special Goddard Program Helps Aspiring Engineers

(Continued from page 4)

students. The national completion rate for minority students is approximately 30 percent, according to MSU's Dean of Engineering Dr. Eugene Deloatch. Ten of the 14 students graduating have a grade point average of 3.0 or above, and five are graduating with honors.

Deloatch thinks very highly of the program. He says one of the benefits of the program is to keep the kids working together. He feels that many students, especially minority and women engineering students, benefit from the extra support of a group.

"The program works because it keeps the kids working together, helping each other," Deloatch said. The Class of 1991 is a prime example of how the program can work. "Even after four years, these kids are still in the study groups that formed the summer before their first year," Menchan said. "One for all and all for one. That's the spirit this group had," he added.

Deloatch said, "We're really pleased to be a part of this experiment. I just wish we could do it for all the students."

In addition to the six weeks of classes the students get a tour of GSFC, and speakers from Goddard go to MSU to discuss careers at Goddard. The program seems to pay off. Two of the Class of 1991 Engineering Enrichment Program students recently were offered jobs at Goddard and accepted.

NASA
National Aeronautics and
Space Administration
Goddard Space Flight Center

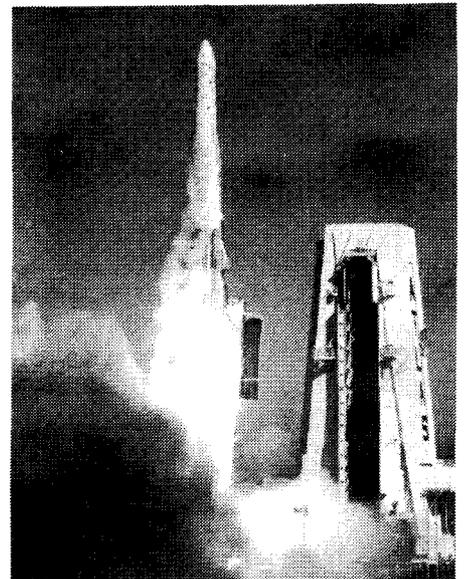
Goddard News

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THE WORLD'S LATEST WEATHER EYE IN THE SKY -- NOAA-D thundered skyward atop an Atlas-E booster from Vandenberg Air Force Base, CA, May 14, 1991 at 11:52 a.m. Eastern Daylight Time. The launch was the culmination of many months of hard work by a variety of divisions at Goddard. Officials report the NOAA-D satellite is functioning perfectly in Earth orbit.