

Study Detects Phenomenon Not Seen Before

A U.S. scientific balloon experiment in the Antarctic has returned with new results from the gamma ray emissions from Supernova 1987A, according to Dr. Jack Trombka, Code 682. He discussed the results of the Gamma Ray Advanced Detector (GRAD) Antarctic Balloon Flight at a briefing on May 3 at the Center for Seismic Studies, Arlington, VA.

"The GRAD made measurements of three major gamma ray lines from the supernova," Dr. Trombka said. "In addition, the GRAD saw the structure of the splitting of gamma ray lines, a phenomenon which has been predicted, but never seen before."

The results are more detailed than those of previous measurements from earlier balloon flights and yield new information on the dynamics of the supernova explosion, according to Trombka.

GRAD Results

"The GRAD results will help scientists determine how heavy elements, such as iron, copper and nickel, came to be a part of Earth," he added. The experiment

reconfirmed that cobalt-56, a radioactive element in the same family as iron and nickel, was produced in the explosion, according to Dr. Trombka.

"The data obtained from GRAD are valuable for our Mars Observer flight," Dr. Trombka said. Dr. Trombka is the project scientist for the Gamma Ray Spectrometer on the 1992 Mars Observer mission. One reason that the GRAD experiment will help plan the 1992 mission is because Antarctic radiation levels are similar to those around Mars.

"The ratio of cosmic rays to secondary neutrinos at the South Pole is similar to that on Mars," Dr. Trombka explained. This is because Mars has a slight magnetic field, and the Earth's magnetic field is weakest at the North and South Poles, according to Dr. Trombka.

Dr. Trombka and co-investigator Dr. Richard Starr, a contractor from Catholic University's Physics Department working at GSFC, are collaborators with GRAD Principal Investigator Dr. Carl Rester of the University of Florida's (Gainesville) Laboratory for Astrophysics and Planetary Explorations. On the Supernova 1987A

project, they participated in mission planning and operations, data reduction and interpretation of results.

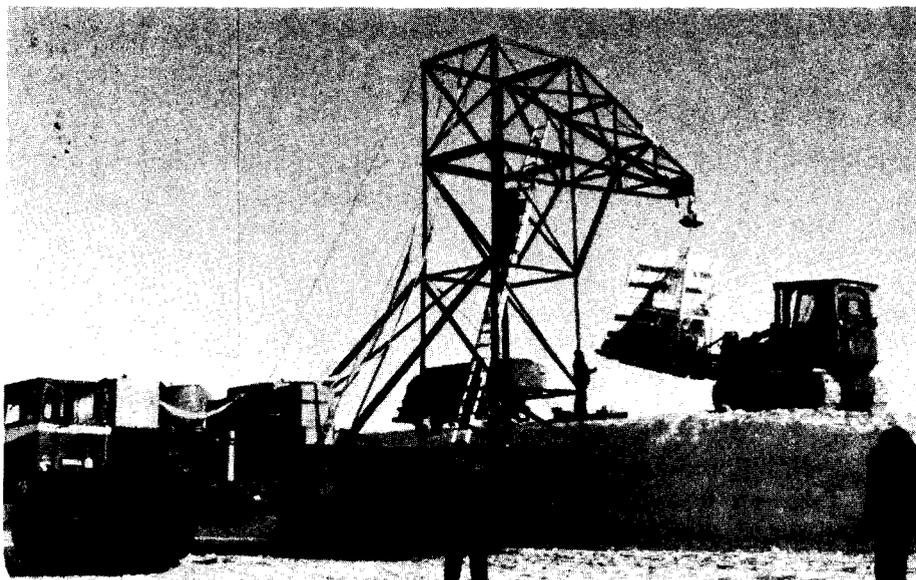
Largest Balloon

The helium-filled balloon, which measured 11.6 million cubic feet (about the size of a football field), the largest ever used in Antarctica, was launched on January 8, 1988.

The GRAD, originally scheduled for a Shuttle mission, reached an altitude of about 22 miles and stayed afloat three days. It was launched from Williams Field near McMurdo Station, the principal U.S. research outpost in Antarctica. The balloon landed approximately 200 miles from the Soviet station at Vostok and was retrieved by the U.S. on January 13. About 12 hours of observation in the direction of the supernova and nine hours of background were achieved, according to Dr. Starr.

Antarctica was chosen for the experiment because it is an ideal site for the observations of the supernova; it offers continuous observations because of the 24 hours of sunlight. Supernova 1987A first was observed on February 23, 1987 and is visible only in the Southern Hemisphere. At launch time, the supernova was almost directly above Antarctica, and remained so during the entire mission.

A team of 12 balloonists from the Defense Advanced Research Project Agency (DARPA), Air Force Geophysics Laboratory, New Mexico State University and Oklahoma State University assembled and launched the balloon and its payload and operated the tracking and telemetry system.



ANTARCTIC PAYLOAD—A snow bank was built to elevate the Gamma Ray Advanced Detector (GRAD) payload so it could be attached to the balloon prior to launch. The GRAD experiment yielded new information about Supernova 1987A and will pave the way for the 1992 Mars Observer mission.

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Talk from the Top

John W. Townsend Jr.

Q: *Are Goddard scientists spending too much time performing basic research that could be done by University scientists? Should our scientists be more project oriented?*

A: No, I don't think so. I think that Goddard has been strong through the years because we are engaged in research. We understand our disciplines. Doing it yourself makes it easier and probably better for us when we aid and abet people on the outside. I think there are some cases, in certain places, where we should be perhaps a little more project oriented than we have been, but in general, I do not feel that we are doing too much basic research.

Q: *I've heard people say that Federal government managers are stifled by bureaucracy. You've been a manager in both industry and government: would you please comment on the difference between managers in the Federal government and managers in private industry?*

A: In industry, goals and objectives are very clear, measureable and under the managers' control. That tends not to be true in government. For example, the system through which we get personnel points is disconnected from the system which gives us money. The two of them are disconnected from the system that gives us our physical plant! In industry, I would have control over resources and allocate them as I saw best. If I felt I could do a job better with more people and fewer bucks, that would be fine; maybe it would be the other way around. In any event, I could make that decision. In the government, it's not that way.

To anonymous writer with question about fairness of office performance appraisal procedures: Dr. Townsend gave your question to Roger Jenkin, Chief, Personnel Division and asked Jenkin to brief him on the subject.

Center Director Dr. John W. Townsend, Jr. wants to hear from you! Send your questions to: TALK FROM THE TOP, Code 130.

Astronomers Celebrate A Decade of Observations with the IUE

by Rande Exler

More than 300 astronomers representing 23 countries visited Goddard recently to pay tribute to a 10-year old observatory that has been called both NASA's most productive telescope and an engineering miracle. In honor of the occasion, Goddard, the European Space Agency (ESA), and the Science and Engineering Research Council (SERC) of the United Kingdom hosted a week-long symposium, entitled "A Decade of Ultraviolet (UV) Astronomy with the International Ultraviolet Explorer (IUE)."

The visiting astronomers came from both sides of the Atlantic to demonstrate through papers and posters how productive the IUE really is. Topics included supernovae, stellar activity, planetary nebulae and instrumentation techniques.

Most Productive Satellite

Dr. Yoji Kondo, IUE Project scientist at Goddard, maintains that the IUE is NASA's most productive spaceborne telescope. "As the IUE completed its tenth year in orbit, more than 1,400 articles based on IUE observations have been published in refereed journals," he said. "This far exceeds the number of articles based on data from other telescopes in similar journals during the same time period."

The IUE's extended longevity was another reason for symposium scientific celebration. Given a five year "life expectancy" when it was launched on January

26, 1978, the IUE has more than doubled this figure.

And this didn't happen by chance.

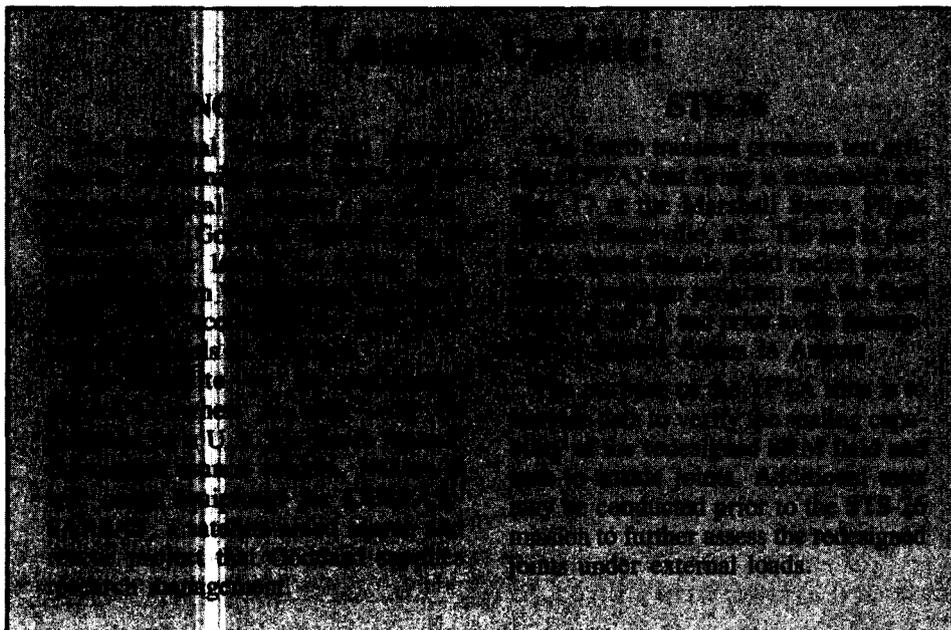
Future historians may write the IUE story in the same vein as *The Little Engine That Could*. Like the little engine which said, "I think I can, I think I can," a dedicated Goddard team said "we know we can, we know we can," and breathed new life into the ailing spacecraft when the IUE suffered a gyro failure and lost its pointing capability in 1985.

Two Working Gyros

The IUE was originally designed to operate in a three gyro mode and the 1985 failure left only two gyros working. Goddard's guidance and control team led by Henry Hoffman, Code 712, developed software that substituted the spacecraft's Sun sensor for the lost gyro.

"We have a one-gyro system sitting in our hip pocket," Hoffman said. This system will be uplinked to the IUE if and when one of the remaining gyros fails.

Dr. Kondo chaired the scientific organizing committee for the celebratory symposium. Goddard employees who served on the local organizing committee were Dr. Jaylee Mead, Co-chairman, Code 630; Dr. Andrew Michalitsianos, Co-chairman, Code 684.1; Dr. Stephen Maran, Code 680; Joy Nichols-Bohlin, Computer Sciences Corporation; and Dr. Donald West, Code 684.1

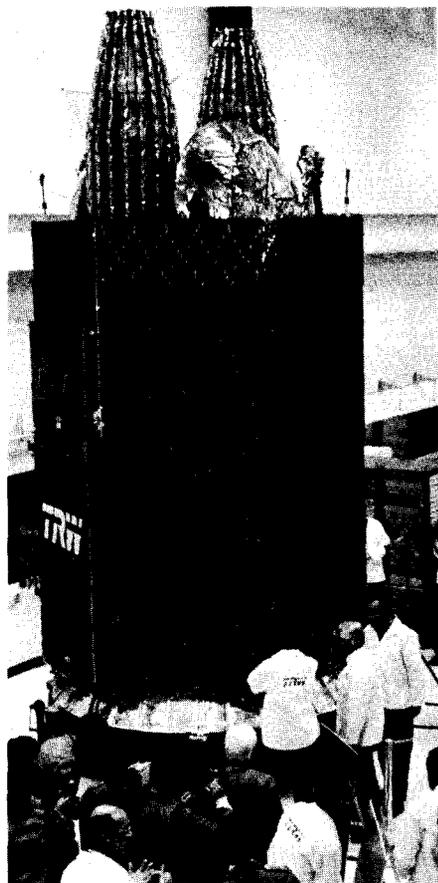


TRW Hosts TDRS and GRO Double Header

by Carter Dove

The Goddard-managed Tracking and Data Relay Satellite (TDRS)-C — primary payload for the Space Shuttle Discovery (STS-26) on its scheduled August, 1988, launch from Kennedy Space Center — has been prepared for shipment aboard a U.S. Air Force C-5 cargo jet from Los Angeles, CA, to Cape Canaveral, FL, on May 15.

The 5,000-pound (2,260-kg) spacecraft will be flown to Kennedy Space Center,



STS-26 PRIMARY PAYLOAD—Bruce Giles, Manager, TRW Test Department (center), discusses the Tracking and Data Relay Satellite (TDRS)-C with Astronauts Col. Robert Springer (left) and John Michael Lounge (right). Lounge will be a mission specialist on the next Space Shuttle Mission, STS-26, which will carry this Goddard satellite as its primary payload.

where, over the next few months, it will be tested, mated with its Inertial Upper Stage (IUS) propulsion unit and subsequently installed in the cargo bay of the Space Shuttle Discovery.

Built by TRW, the TDRS-C — once deployed into its geosynchronous opera-

NASA Pipeline

LANGLEY RESEARCH CENTER, Hampton, VA—Langley has selected Unisys Corp., McLean, VA, for negotiation of a contract for scientific computer operations, programming and analysis support services. Estimated value of the contract is \$32.2 million. The contractor will provide support services for the operation of Langley's central scientific computer complex.

AMES RESEARCH CENTER, Moffett Field, CA—A computer-generated display system, to aid close-in spacecraft maneuvers, has been developed at Ames. The system can be placed aboard spacecraft such as the Space Station to help conduct and monitor maneuvers within one mile of spacecraft. Proximity operations include docking and berthing orbital vehicles and rendezvous between two or more vehicles. The perspective display is now in use at Ames in a full-scale research mock-up of a proximity operation control center for the Space Station.

NATIONAL SPACE TECHNOLOGY LABORATORIES, Bay St. Louis, MS—NSTL's Earth Resource Laboratory and the Johns Hopkins Wilmer Eye Institute, Baltimore, MD, plan to adapt technology used for computer processing of images from satellites and head-mounted imaging systems, originally developed for Space Station projects, to enhance vision. The planned device will resemble "wraparound" sunglasses. Patients will see the world on two miniature color television screens. The system is expected to benefit patients who have peripheral or central vision losses.

HEADQUARTERS, Washington, DC—NASA has announced the selection of nine universities to conduct long-term research into promising areas of space engineering and technology. The nine university-based centers, chosen from 115 applicants, are eligible to receive up to \$500,000 for the first year and over a million a year for a minimum of four years. This year's selection of University Space Engineering Research Centers includes new opportunities for university specialization such as Mars mission technologies, extraterrestrial materials, in-space construction and large space-based observatories.

MARSHALL SPACE FLIGHT CENTER, Huntsville, Ala.—NASA has submitted to the Congress its acquisition plan for the Space Shuttle Advanced Solid Rocket Motor (ASRM). The plan contains NASA's strategy for a full and open competition to produce at ASRM into the Shuttle system. This will result in substantive improvements in flight safety design margins, reliability and performance.

tional orbit 22,300 miles (35,900 km) from Earth — will be designated TDRS-2 and join the now-orbiting TDRS-1, launched in April 1983.

The TDRS-C will become part of an eventual three-satellite constellation to improve NASA's tracking of and communications with orbiting spacecraft, including the Space Shuttle.

The satellite was rolled out in a "double header" media event at the TRW facility at Redondo Beach, CA on April 12.

The "companion" event to the TDRS-C roll-out was the opening of a \$6 million facility for the assembly of Space Shuttle-class payloads, the first of which, the Goddard-managed Gamma Ray Observatory (GRO), was on display for the media and visitors at the TRW facility.

The 17-ton GRO — now set for Shuttle launch in early 1990 — is designed to col-

lect more and better gamma ray data than ever before possible. One of its four instruments is the Goddard-built Energetic Gamma Ray Experiment Telescope (EGRET).

At 5,000 pounds, the TDRS satellites are the largest, most complex communications satellites ever built. Each measures more than fifty feet from one tip of its solar array to the other.

The planned-for second satellite in the TDRS series, TDRS-B was the primary payload on board the ill-fated Space Shuttle Challenger (STS 51-L), which — along with its crew of seven — was destroyed by explosion on January 28, 1987.

TRW now has completed the basic structure of the GRO. Approximately 225 TRW employees will continue on its final assembly, in preparation for system test and integration of the GRO's four instruments.

Building A Better Work Place

Editor's Note: Goddard's Facilities Engineering Division is continuously involved in various projects, large and small, that improve or expand Goddard's environment. These photos represent a sampling of the projects the Facilities Engineering Division is currently supporting.

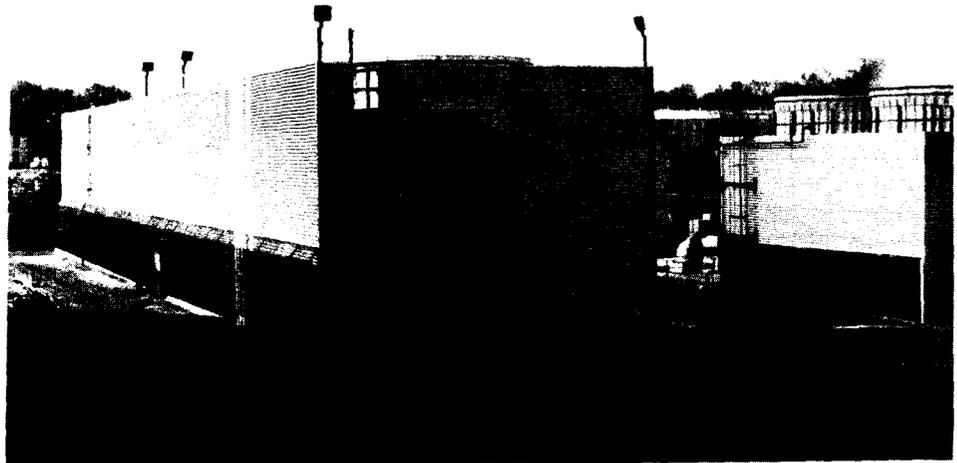


SECOND TDRSS GROUND TERMINAL—This picture, taken on March 29, 1988, looks from the northeast at the Technical Support Building of the second Tracking & Data Relay Satellite System (TDRSS) Ground Terminal in White Sands, NM. The three antenna dishes in the background are part of the existing NASA Ground Terminal at the White Sands facility. Kent Potter, Code 271.2, is resident engineer for the Second TDRSS Ground Terminal Project.



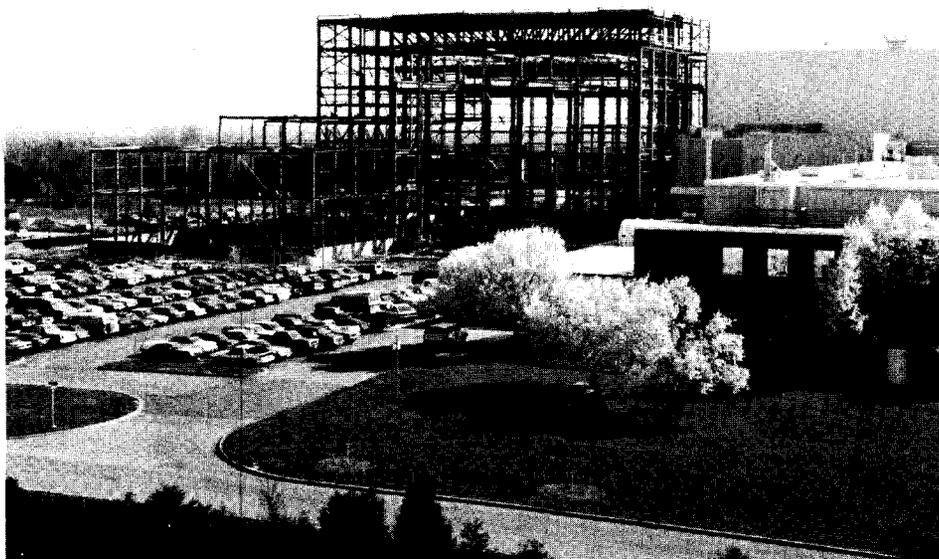
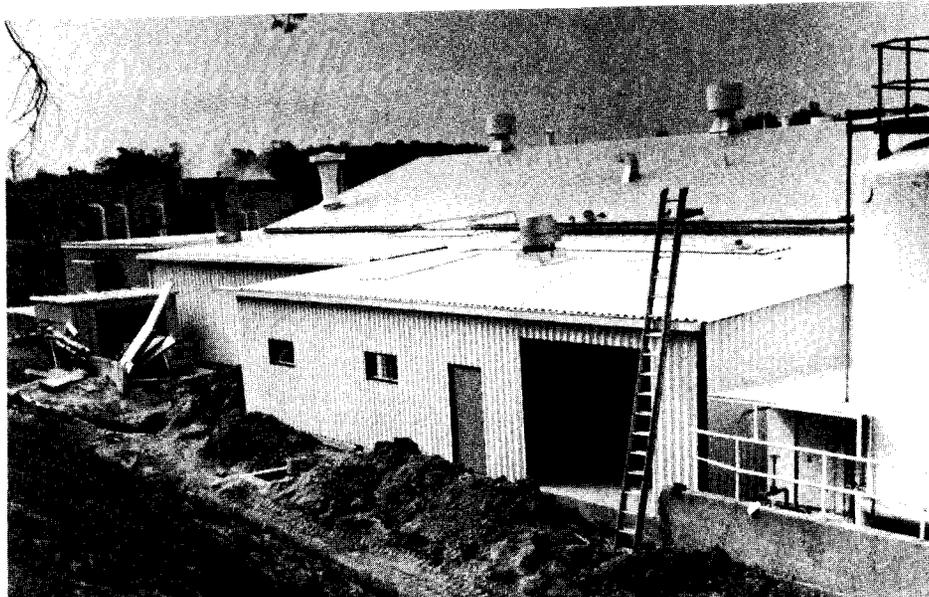
WALLOPS ISLAND CAUSEWAY BRIDGE—This bridge, built in 1959, not only provides the main traffic access to Wallops Island, but also carries the domestic water line and electrical feeder serving the island facilities. The construction project, begun in 1986 to reverse deterioration due to almost 30 years of exposure to a harsh environment and periodic overloading, was accomplished partly in 25 °F temperatures with 25 knot/hour winds. William Bott, Code 273.1, was the project engineer for the bridge.

REPAIR OF COOLING TOWER B, BUILDING 24—This picture, taken from behind Cooling Tower B at Building 24, represents one of many important construction projects in Goddard's continuing program to upgrade a 30-year-old infrastructure. This cooling tower serves the Center's main chill-water plant. Harmohindar Singh, Code 271.1, is the project engineer.



SPACE STATION INSTRUMENT THERMAL TEST BED FACILITY—

This addition to Building 4 will house experiments to test and evaluate Space Station heat transfer systems and devices. Project engineer for the test bed facility is Tim McCaine, Code 271.3.

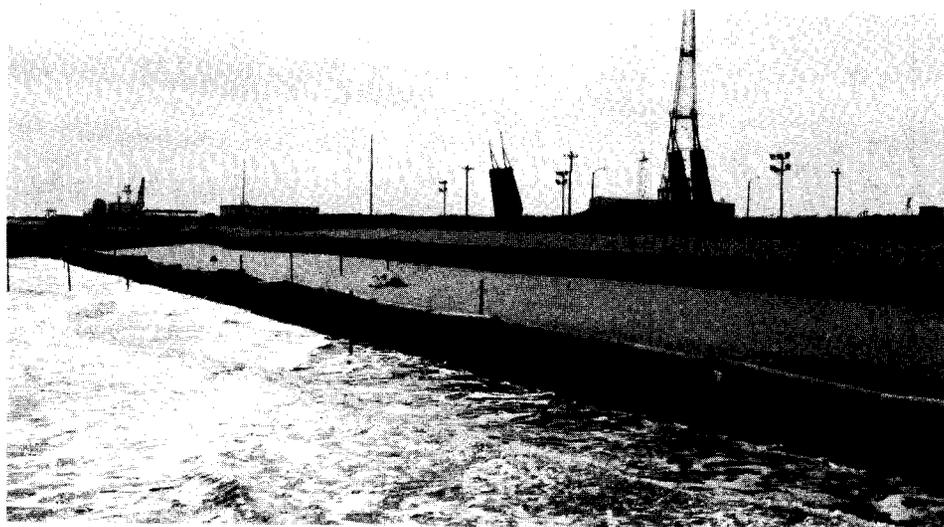


SPACECRAFT SYSTEMS DEVELOPMENT AND INTEGRATION FACILITY (SSDIF)—

When complete in October 1989, this facility located behind Building 7/10 will be a 12,500 cubic-foot clean room, one of the largest of its class. This picture shows the completion of all of the structural steel, looking northeast from the top of Building 5. Alfonso Eaton, Code 271.1, is the project engineer for construction of the SSDIF.

SEAWALL PROTECTION PROJECT

—This picture shows a series of innovative “Beach Beams,” part of a comprehensive plan to protect both the unique launch capability of the Wallops Launch Facility and the existing seawall. The “Beach Beams” absorb wave energy in such a way that sand will be deposited behind the systems to build up the beach instead of eroding it. Project engineer for the Seawall Protection Project is Roy Conk, Code 273.1.



Around the World With San Marco

by Jim Elliott

If you'd asked him a few years ago, he probably would have been willing to "chuck" it all, just walk away and forget that there ever was or ever had been a project named San Marco.

Today, however, Ron Adkins wears a smile of gratification, a satisfaction long overdue after years of agony. The "thrill of victory" came on March 25 when the San Marco satellite blasted into a low Earth orbit on a Scout rocket from a launch platform in the Indian Ocean off Kenya.

Now, San Marco is circling the Earth every 100 minutes, productively transmitting data to scientists in Italy, West Germany and the United States and, by all measurements, is a highly-successful international effort.

For what many persons thought was "too long," the project moved along slowly, beset by one problem here and a setback there until it became almost as scorned by others as a "you-know-what" at a family reunion. To be sure, all the problems were not of Adkins' making, and those who know how impatient the 54-year-old native of Whitesburg, KY, can be, often wonder how he avoided either giving up or flipping his lid.

His superiors give him considerable credit for what might be considered "duty above and beyond the call." This is so because of the ups and downs of Italian politics, with one party in power one day and another party in power the next.

Tough Situation

"It was a tough situation to handle," one explained. "Not only were governments changing, but budgets were being recalculated and policies were being reformulated. Adkins had to play the middle-of-the-road throughout all of this, and had he not been the type of fellow he is, I doubt that we'd be off the ground yet."

Adkins, who came to Goddard as a Melpar employee in 1959, admits that he's learned a whole lot about Italian politics in the 10 years he's been with the project, but modestly declines to take any bows.

"The success of the program came because we had a lot of hard-working, dedicated people who were tremendously supportive and showed outstanding initiative," the six-foot, three-inch project manager emphasized. "There are too



ROMAN EXPERT—Ron Adkins has learned a lot about Italian politics since he joined the San Marco Project in 1978.

many of them to name, but they know who they are. They're the ones who deserve the accolades."

That may be the way that Adkins recalls the past, but Mel Donahoo, his deputy, thinks they had considerable help from "outside" this planet.

"There were a few times, believe me," he smiled, "when I felt like we were standing before the multitude with only a few loaves of bread. Somehow, though, each time a 'miracle' seemed to happen when we needed it."

Adkins and his family moved from Kentucky to Washington when he was nine. His father had died when he was five, and he was raised by his mother and grandparents. He was one of two children, his sister having died some time ago.

Following graduation from Anacostia High School in 1953, he went into the Air Force for four years, ultimately becoming a modern bombing systems specialist on B36 and B47 Strategic Air Command bombers. After leaving the Air Force, he attended the Capitol Radio Engineering Institute in Washington for two years.

He joined Melpar at that time and then continued to work at Goddard as an employee of Washington Technological

Associates. In 1961, he became a Civil Service employee.

UK Satellite Series

From the first day he arrived until now, Adkins has worked with satellites. He worked on the integration team for the whole United Kingdom (UK) series of spacecraft and later worked with the engineering branch that made receivers, transmitters and encoders.

"Those were the days when we produced a lot of the hardware here," he explained.

He became involved in many of the international projects working primarily in the field of spacecraft electrical systems. He joined San Marco as project coordinator in 1978 and became project manager in 1981.

A lean 175 pounds, Adkins seldom is found without a Winston Light 100 in his grasp. He carries a tan that never fades. He's crossed the Atlantic so many times that the TWA flight crews look upon him as a part of the team.

There have been times when Mary, his wife of 30 years, might have thought the same thing. The Adkins have four children and four grandchildren.

Although the San Marco project was memorable, Adkins believes he gained the most enjoyment since he's been with NASA during the time he worked with the UK projects.

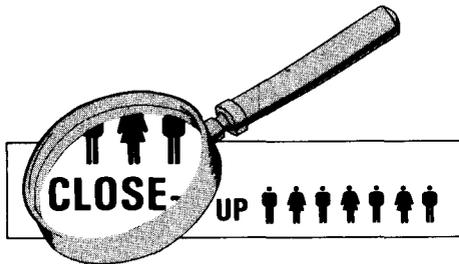
"That was, after all, my first experience in an international program," he reflected. "We launched from all the NASA launch sites—the Cape, Western Test Range, Wallops and San Marco—and we used both Delta and Scout launch vehicles. The experience was really great, and I met some wonderful people."

He says the same of the Italians on San Marco. "They're really great people who work under difficult conditions," he continued. "I have made some lifelong friendships."

His deputy manages a smile when he hears things like that. "They're going to miss him, too," he mused. "After all, he probably knows more about Rome than he knows about Annapolis or about Arnold (where he lives).

"When he's in Rome, the Italians ask him where they should go out for dinner!"

Goddard's "City Manager" Transfers



HALL

Congratulations to **DR. DOROTHY K. HALL**, Code 624, one of six recipients of the Downtown Jaycees 1987 Arthur S. Fleming Award. The award is presented annually to men and women who have made substantial contributions to the Federal Government in the fields of science and administration and have contributed to their community through a diverse number of civic organizations. Hall received the award "for her outstanding achievement as a research scientist in interpreting satellite data of the Earth for snow and ice studies related to global change, for explaining this achievement for the school and college student, and for using her general scientific knowledge to help her community."

Congratulations, also, to Goddard's recipients of 1988 Baltimore Federal Executive Board Career Service Awards: **AMETHYST E. SHARP**, Code 403, (Category IV, Outstanding Clerical Employee Award); **JOHN BANISZEWSKI**, Code 285, Procurement Manager for the Mission Operations and Data Systems Directorate (Category IA, Outstanding Supervisor Award); and **WILMA S. CHIGAS**, Code 221, (Category IIB, Outstanding Professional Employee Award). Awardees were honored at a luncheon on April 22, which included an address by William Donald Schaefer, Governor of Maryland.



COOPER

BENITA A. COOPER often referred to herself as Goddard's "city manager." Others refer to her as the driving force behind "minority recruitment at Goddard" and "the development of the Management Operations Directorate into a customer-oriented organization."

Cooper, Director of Management Operations since October 1980, has transferred to NASA Headquarters where she will be Assistant Administrator for Headquarters Operations.

"Benita was instrumental in initiating contact with major universities with minority populations. She reached out to previously untapped areas of the country

such as New Mexico, Arizona and New York," recalled James P. Harrington, GSFC Cooperative Education Coordinator.

"After the Management Operations Directorate was reorganized [May 1981], Benita brought our organization together. She channeled energy in a new direction and got the institution services in step with the programmatic requirements of the Center," said Marty Stein, Associate Director for Institutional Management. "We're a lot further ahead because of her efforts to modernize administrative support through services such as ADP [automated data processing], CAD-CAM [computer aided drafting] and computer graphics," he added.

In her new position, Cooper will be responsible for directing and coordinating all institutional and administrative support necessary for the operation of NASA Headquarters. She will report to the Associate Deputy Administrator (Institution), Dr. Noel W. Hinners.

Cooper joined NASA in 1968 as a Management Intern at NASA Headquarters and, in 1970, moved to GSFC in the personnel organization where she became the Director of Personnel in 1973. She served as the Assistant Executive Officer to the Deputy Administrator of NASA for two years from 1977 to 1979 and returned to GSFC in 1979 as the Deputy Director of Administration.

John Scully, Deputy Director of Management Operations will serve as the Acting Director of this directorate until a replacement is appointed.

Visitor Center—June Calendar

- June 5—**
Model Rocket Launch—1:00 p.m.
- June 11—**
Star Watch—9:00 p.m to 11:00 p.m.
- June 11 & 12—**
NASA Film Series—1:00 p.m.
"Flying Machines"
"4 Rms—Earth View"

- June 19—**
Model Rocket Launch—1:00 p.m.
- June 26—**
Public Program—1:00 p.m.
"Spacecraft Sensors: Our Eyes In the Skies" presented by Charles Sturgell, Head of Advanced Development Section
NASA Film—
"The Delta Space Vehicle"

For more information, call the Visitor Center at 286-8981.
The Visitor Center is open Wednesday through Sunday, from 10:00 a.m. to 4:00 p.m.

What Do You Like About Your Job?

Editor's Note: "In recognition of exceptional contributions to the effective operation of the GSFC through professional competence and personal dedication," Goddard honored its secretarial and clerical work force with a luncheon at Martin's Cross Winds on Thursday, April 19. The Goddard News Staff interviewed the award winners to find out what they like about their work:

Patricia A. Ratkewicz (Code 130): "There's never a dull moment. . . I get to see all the projects—it's just an interesting place to work."

Gina J. Tiqui (Code 240): "The people—It's a really good environment."

Helen M. Zug (Code 250): "This job gives me what I need. . . The responsibility gives me job satisfaction; I have a good professional relationship with my boss; I get recognition from management and my peers; and I have a great working environment."

Lynn A. Dalkiewicz (Code 250.3): "I really enjoy the on-the-job training and microcomputer experience I'm receiving as part of my job."

Lorrie L. Eakin (Code 284.5): "The people are very nice."

Freda W. Johnson (Code 293): "Two things: The people, and the variety. . . It's always a challenge."

Joanne M. Smith (Code 286): "The best part of my job is definitely the people I work with. It's like a family around here."

Sheri R. Hall (Code 300): "I do a variety of work. It's not the same old thing every day, so I don't get bored. There's always something different to do."

Cheryl A. Jones (Code 400.6): "My job keeps me right on the forefront of space technology, which is exciting. . . It's very enjoyable. . . I get a lot out of it."

Dorene K. Kramer (Code 400.6): "I enjoy the interaction with other people—my boss and my co-workers."

Amethyst E. Sharp (Code 403): "Working on a project is very rewarding and exciting. I've watched many launches and that's the reward. And the people are a very nice group to work with."

Levina A. Carlson (Code 541): "I like the people. . . We get along very well. I've been working in the same branch for 14 years. This job keeps me busy."

Carolyn L. Trakas (Code 522): "My boss is great. She and I work well together. My job keeps me constantly busy."

Priscilla K. Bowes (Code 563): "I just love it! The people. . . we're like an extended family. I've had three great bosses."

Bonita D. Sharpe (Code 610): "The work is very interesting. The people are enjoyable and easy to work for."

Kelly L. Wilson (Code 610): "The best thing is the environment. Working with science is challenging and the people are nice to work with."

Kathy L. Norsworthy (Code 660): "I've learned a lot in the last four years from the people I work with."

Charlene A. Smith (Code 670): "Nice folks. . . I work for a worthwhile program which gives young people necessary skills to join the Goddard workforce."

Lisa J. Wood (Code 672): "The challenge—the amount of work. This job gives me an opportunity to better understand the computer field."

Sandra P. Wigton (Code 700): "I enjoy all the people. . . Working in the space program is really exciting!"

Stella G. Speth (Code 742): "I enjoy the variety in my job. . . I respect the people and work with and they respect me."

Florence S. Insley (Code 822.1): "It's not a routine job. . . I get to use my skills and learn new ones. . . I enjoy working with the public."

Louise Teague-Allen (Code 842): "I feel like I accomplish something everyday. I like the people. They're kind and friendly."

TRAVEL SECTION (Code 151.2); Mary J. Watts, Joan C. DeMarco, Rette C. Dick, Frances E. Reed, Elizabeth C. Savoy, Shelby L. Sykes, Jean L. Van Hoesen, Rebecca C. Willis: "We work in a very stimulating environment. . . Everyday is different. . . We enjoy meeting and speaking with the travellers and working with each other."

PAYROLL OFFICE (Code 151.2); Virginia G. Estes, Richard D. Austin, Shirley L. Dale, Elmira A. Drabik, Joyce V. Green, Delores J. Shaut, Dina F. Tomas: "We've had many challenging changes in the past few years. . . and it's exciting to. . . successfully fulfill them. The job keeps us alert."

Unavailable for comment: **Patricia L. Alexander, Code 153; Laura J. Merson, Code 284.3; Tracy L. Parlante, Code 630.**

NASA
National Aeronautics and
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Goddard Space Flight Center

Goddard News

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The GODDARD NEWS staff is:

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Rande Exler
Assistant Managing Editor
Carolynne White
Senior Editors
Michael Braukus, Carter Dove,
Jim Elliott and Joyce Milliner

Retirees

Farewell and best of luck to the following retirees who left Goddard recently!

	CODE	YEARS
Bever, Renate S.	711.4	10
Bielawski, Albin	563.2	21
Hayes, Joseph A.	235.1	41
Huffman, Ray A.	534.3	36
Kelly, John W.	712	33
Kull, Frederick J.	400.6	37
Von Bun, Friedrich O.	600	35