NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

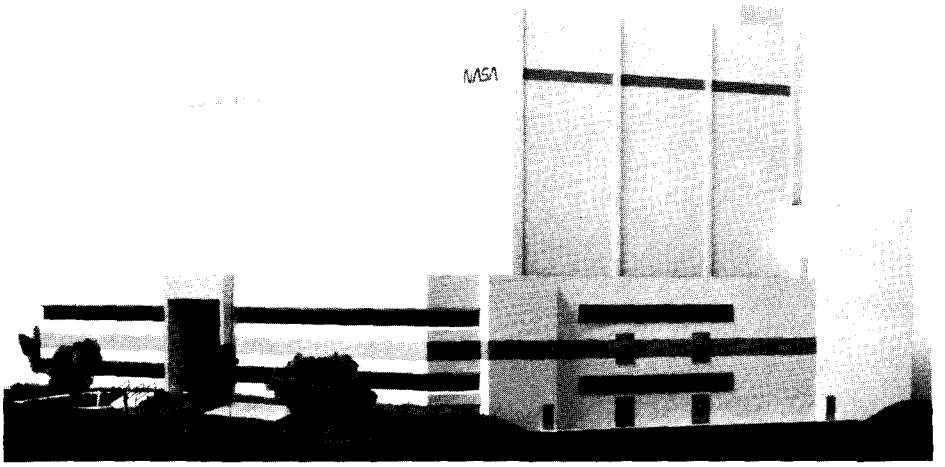
Greenbelt, Maryland and Wallops Island, Virginia Vol. 33 No. 6 June 1987

Goddard Breaks Ground for New Spacecraft Facility

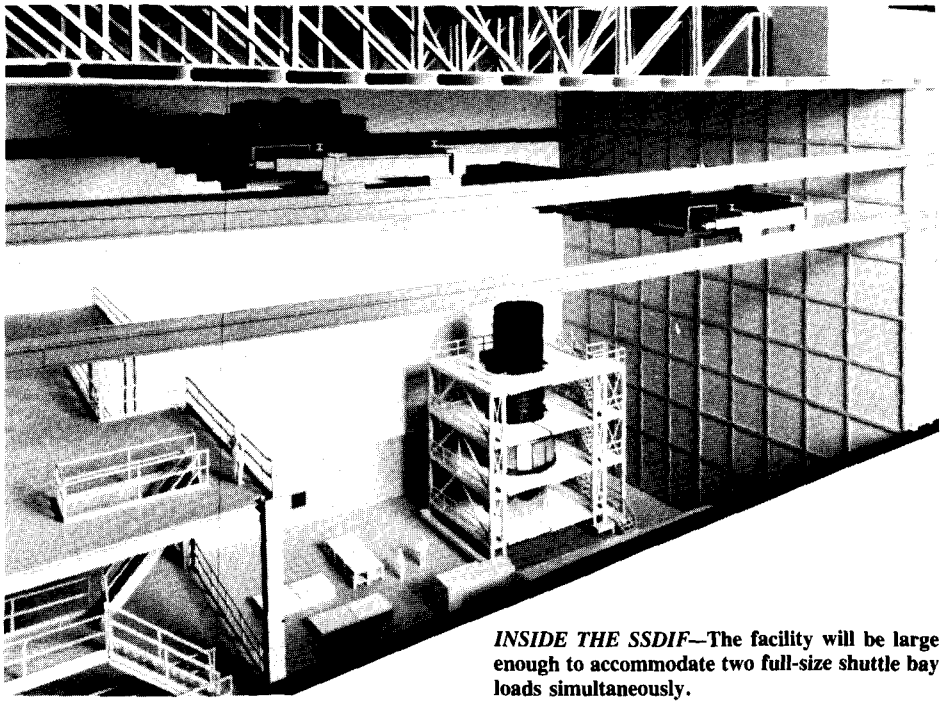
by Michael Braukus

A ground breaking ceremony was held at Goddard on June 10 for a facility that will contain the world's largest clean room of its type.

Dr. Noel W. Hinners, Goddard Director, John J. Quann, Deputy Director, and John H. Boeckel, Director of Engineering, shared the ceremonial duty of digging the construction project's first shovelfuls of earth. The ceremony for the facility, to be known as the Spacecraft Systems Development and Integration Facility (SSDIF), was held at the building's future site, an area adjacent to the 7/10/15 building complex.



CONTAMINATION FREE—**The world's largest laminar flow clean room will be located at Goddard when the construction for the Spacecraft Systems Development and Integration Facility (SSDIF) is complete in 1989.**



INSIDE THE SSDIF—**The facility will be large enough to accommodate two full-size shuttle bay loads simultaneously.**

Goddard awarded the SSDIF contract, worth $6,757,000, on May 11, 1987 to Blake Construction Company, Washington, D.C. The total award could be as much as $15,757,000 if the various options are exercised.

The facility will give Goddard the capability to handle large payloads. When completed in 1989, the SSDIF will provide approximately 78,000 square feet of floor space.

The 90-feet-high laminar flow clean room, a contamination-free enclosure, will provide 12,500 square feet of space, enough to accommodate two full-size shuttle payloads simultaneously. Two 35-ton cranes will handle the clean room lifting duties.

The only facility of its kind on the East coast, the SSDIF will enable Goddard to satisfy a national need for increased capacity to handle large payloads in a clean environment. It also will support NASA's plans for preparations for on-orbit repair and modification of flight hardware.

Goddard was assigned a primary part in the agency's plans for servicing major spacecraft systems because of its involvment in the successful repair of the Solar Maximum Mission satellite by 41-C mission astronuats, James van Hoften and George Nelson.

Since the first U.S. satellite was launched in 1958, the size and weight of payloads carried by expendable launch vehicles and the Space Shuttle have been increasing. For example, Vanguard—one of the Nation's first satellites—was only six inches in diameter and weighed 57 pounds.

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CPR TRAINING PAYS OFF— Employee Saves Supervisor's Life

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New Facility

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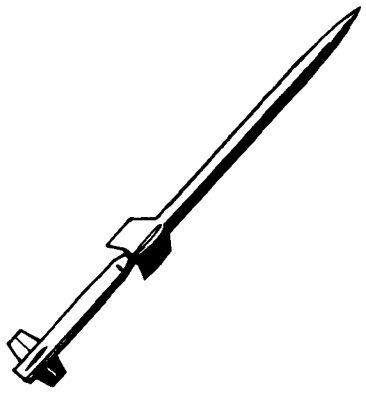
In comparison, the Hubble Space Telescope (HST), which now is scheduled to be deployed from the Space Shuttle Discovery in late 1988, is 43 feet long and weighs 25,000 pounds.

To support the needs of HST and other satellite servicing missions, Goddard was in need of a large integration facility capable of handling large payloads. The Center came closer to realizing those needs with the SSDIF ground breaking.



Model Rocket Contest Blasts Off From Visitor Center

Attention model rocketeers! The Seventh Annual Model Rocket Contest will be held at the Visitor Center on Sunday, July 19 at 1:00 p.m.

There is no registration fee, and participants can register at the launch site on the day of the event. Certificates of participation will be awarded to all model rocketeers, and first through third place trophies will be awarded for each event.

This year's competition commemorates the 18th anniversary of the Apollo Moon landing, the 26th anniversary of America's first manned space flight, and is designed to promote interest in space-related activities.

The model rocket competition is sponsored by the National Space Society, the American Institute of Aeronautics and Astronautics/National Capital Section and the Goddard Visitor Center through the Office of Public Affairs. Local sections of the National Association of Rocketry (NAR) are cooperating, also.

In case of rain, the competition will be held Sunday, July 26.

For contest rules and further information, call x68981.

Employee Services Area Opens Doors for Business in Building 1

by Randee Exler

Goddard's Personnel Division recently opened the doors to a new resource area which houses a wealth of information about employee programs and services.

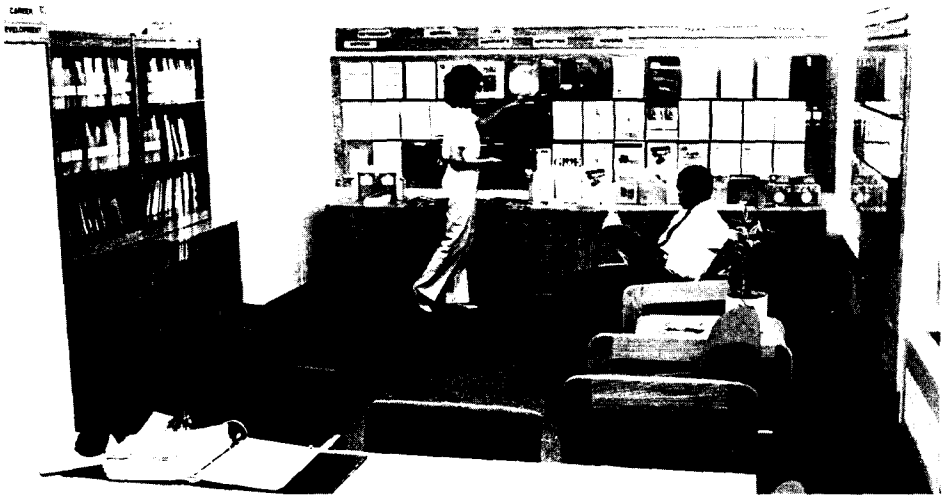
The Employee Services Area, located in Building 1, Room 160, contains information about job opportunities, health and life insurance, career development and training, housing and relocation services, employment and recruiting literature, professional publications, and other items of interest in one central location.

"Our goal is to provide information and be responsive to employee, supervisor and public needs," explained Bill Ingerski, Head, Personnel Services Branch about the creation of the Employee Services Area. "We wanted a central location to make our resources more accessible."

In addition, Ingerski said that the resources area is designed for a business-like atmosphere that is attractive, comfortable, and functional.

The personnel services branch currently is building a video library for the Employee Services Area. Additional services will be provided as new needs materialize.

The Employee Services Area is open to all employees on a daily basis. Drop by any time to see what information might be of interest to you.



***A WEALTH OF INFORMATION*—The new Employee Services Area in Building 1 houses literature about personnel activities. Pictured: Personnel Services Branch Employees check out their new facility. Cynthia Parks (seated, front) thumbs through a vacancy announcement book. Michael Parrish (seated, right) reviews recruitment literature. Pamela Brown (standing) picks up literature about a current Goddard project.**

Federal Employees Retirement System Open Season Begins July 1

The Federal Employees Retirement System (FERS) Open Season begins on July 1 and concludes December 31, 1987. This Open Season is directed toward Civil Service Retirement System (CSRS) employees who wish to convert to the new retirement system.

CSRS employees may convert to the FERS at anytime during this Open Season. However, once the decision is made, it cannot be changed. The Center has scheduled briefings on FERS and the conversion option for July 13, 14, 15, and 17 at Greenbelt and September 10 and 11 at Wallops.

In addition, early in June, employees will be receiving booklets which will detail the new retirement system.

For additional information, call the FERS Hotline on X62779.

CPR Training Pays Off— Employee Saves Supervisor's Life

by Randee Exler

A Ford Aerospace and Communications Company employee assigned to duty in Goddard's Cryptographic Communications Center, Building 3, was awarded an American Red Cross Certificate of Merit recently for saving the life of his supervisor.

Carl A. Andrew Sr.'s Cardiopulmonary Resuscitation (CPR) training was put to the test when his supervisor, Charles Lockard, choked on his lunch and couldn't breathe.

Andrew performed the Heimlich maneuver—a series of abdominal thrusts—on Lockard and dislodged the food.

Andrew received CPR training several years ago at Goddard but never used it before that day. "I didn't have to think about it," Andrew said. "You just have to act fast."

Andrew and Lockard were eating lunch in their workplace, which for security reasons is isolated from outside contact by locked vault doors. Andrew described what happened as follows:

"...all of a sudden my supervisor jumped up holding his throat. There were no sounds coming from his throat and from the color of his face I could tell that he couldn't get his breath. I stood up behind him and gave him four quick upward thrusts just above his waist line but he still couldn't breathe or make any sounds, so I gave him four more quick upward thrusts and was able to dislodge the food that was stuck in his throat and he was able to breathe again."

"I firmly believe that if Carl had not been in the crypto office and acted as fast as he did, I would not be here today...," Lockard wrote in a statement for the American Red Cross.

"He was lucky that Andrew reacted so quickly and had had professional training," said Art Anderson, Safety Specialist, Code 205.2. When a victim's air passage is cut off, the victim loses consciousness in only a few minutes, he explained.

The Cryptographic Communications Center is part of the NASA Communications (NASCOM) Network Maintenance and Operations (M&O) department. "We have a safety standard that we've set for ourselves," said Gordan Verrill, Ford M&O Manager. "One of our goals is to ensure a minimum of one person in each work area, every shift, certified in first-aid and CPR."

Andrew is certified in both.

Representative Steny Hoyer presented the Certificate of Merit to Andrew at the Red Cross Annual Dinner at Andrews Air Force Base Officer's Club on May 12. The certificate was signed by the President of the United States and the Chairman of the American National Red Cross.

Goddard's Health and Safety Branch offers CPR and first-aid training several times a month. For more information call x66296.

***A BREATH OF FRESH AIR*—Carl A. Andrew Sr. (right) performed the Heimlich maneuver on his supervisor, Charles Lockard, (left) which enabled him to breathe again.**

New Space Data Consortium Facility At Goddard

By Carter Dove

The National Aeronautics and Space Administration, the Universities Space Research Association and The University of Maryland College Park—in an unprecedented arrangement—have agreed to establish a space data and information sciences research facility at Goddard beginning October 1, 1987.

To be known as the Center for Excellence in Space Data and Information Sciences (CESDIS), the facility will serve as the nerve center—a "telecenter"—for a network of researchers from leading university and industry computer science departments from across the country.

The CESDIS charter will be to conduct state-of-the-art research on space data and information sciences in areas of potential long-term application to NASA programs in the Space Station era.

Joining with NASA in the research consortium are the Universities Space Research Association (USRA), Columbia, MD—itself a consortium of sixty-two universities which link the university community and NASA—which will operate CESDIS; and the University of Maryland College Park (UMCP), which has established a tenured professorship for the CESDIS director in its computer science department.

In addition, faculty from UMCP's computer science department and from other departments with interest in space research will participate in the activities of CESDIS.

Goddard will provide on-site facilities to house CESDIS, core research scientists, short-term research visitors and visiting faculty members from participating universities. Dr. Jaylee Mead will be the NASA Coordinator for CESDIS.

The CESDIS facilities at Goddard will be used to conduct symposia, workshops and lecture series on state-of-the-art computer technology and provide an opportunity for university and industry computer experts to interact elbow-to-elbow with NASA scientists to solve research challenges.

Dr. Milton Halem, Chief, Space Data and Computing Division at Goddard, characterized the telecenter as an "institute without walls—one which will link universities' computer sciences departments and industry research centers so that

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Modular Data Handling and Linking System Tested with TDRSS

by David Thomas

NASA engineers have successfully tested a modular, fit-all-spacecraft data handling and linking system capable of operating with the agency's Tracking and Data Relay Satellite System (TDRSS) network.

Using flight proven concepts and hardware and incorporating state-of-the-art technology, the module could satisfy the increased data handling requirements for satellites for the next two decades, according to Richard P. Hockensmith, who leads a team of GSFC engineers. He said that it will be on-orbit serviceable, recoverable, resuable and adaptable to most program requirements.

Called the NASA data link module (NDLM), the system will reduce data handling system costs because of its modular features, permitting the system to be adapted to any spacecraft without expensive and extensive engineering modifications.

Many data handling systems, subsystems and components developed by NASA and private industry have evolved over the years. The NDLM uses these, in effect, in an effort to integrate all the previous work into one aggregate part which conveniently can be "plugged into" any spacecraft.

In the tests conducted from a TDRSS observatory in Phoenix, AZ in mid-May, data successfully were sent back and forth between Phoenix and the TDRSS ground terminal in White Sands, NM, via the TDRS satellite, 22,300 miles above Earth.

The NDLM standard concept is similar to the multimission modular spacecraft (MMS) bus used on several existing missions and slated for future missions, according to Center engineers.

"The MMS has flight proven the feasibility of packaging all spacecraft support subsystem components into modules," Hockensmith said. Depending on mission requirements, the NDLM could be as small as a breadbox or as large as a refrigerator. The full complement would be as large as a single MMS module, (4×4×½ feet) with three antennas attached nearby or onto the box. Hockensmith said a prospective

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"Here's A Good One!"
An Inside Look At Public Mail

by Randee Exler

"I'm just the guy who answers the mail," says Dean Dyer as he fumbles through his desk drawer and pulls out another letter.

This one's from Kori Seabury of Brookfield, CT. She writes:

"...I was wondering if you could give me information on Sally Ride or an extra jumpsuit that the astronauts wear?"

Dyer, the Visitor Center's Schedule Coordinator, single-handedly answers almost 200 letters a week from students, teachers and the general public. More than half of Goddard's public mail comes from students of all ages.

The letters come in from around the globe. Correspondence from Poland and "tons of letters" from Mexico arrive weekly, according to Dyer.

His personal favorite came from the Soviet Union. A ninth-grade student requesting information about the shuttle enclosed detailed drawings of Soviet spacecraft. In his letter, the student wrote:

"...I wish the clear sky and peace space in future."

Occasionally, Dyer receives what he calls a "warm up, butter up and punch" letter. One flattering writer said that NASA "...is a marvel only to be rivaled by the unique individuals who make its everyday performance possible..." The author then asked for "...every piece of literature available."

There are restrictions on what can be sent to the public free of charge. Although NASA has some publications of a general nature available at no cost, more detailed information and older publications which are out of stock must be purchased from the Government Printing Office, Washington, DC.

Because of the large volume of mail that Goddard receives, most letters are answered with a form letter. All correspondence is answered within a week.

Dyer, an Omniplan employee under contract to the Visitor Center, may not be an official NASA spokesperson, but to almost 200 writers a week, he's a link to the country's space program.

***"I'M JUST THE GUY WHO ANSWERS THE MAIL!"*—Dean Dyes single-handedly answers almost 200 letters a week from students, teachers and the general public.**

Dear Nasa,
I'm Mr. Davis, and I am trying to get posters for my classroom before we get into the space program and please send them frequently. Please send them to

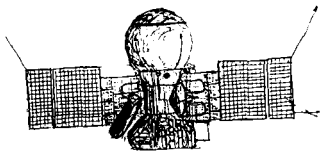
Thank You
Mr. Bill Davis

December 5, 1986

Dear People,
In January my class will be studying about space. Pleas send me some information about space.
I like to learn about space.
The moon is big and stars twinkle.

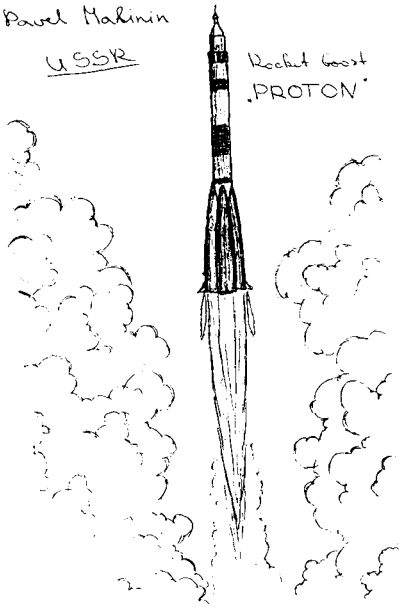
Sincerely,
Tamika Fultz

Spacecraft automated "VEGA-1"



Sincerely yours,
Pavel Malinin
USSR

Rocket boost "PROTON"



Space Food!

Dear Reader,
Hi my name is Jessie Lee Aregood. I always wander how they eat that stuff. Is it food just earthfood frozen or stuck to a tray. I would like to eat some of that food. Could you send me some of that food. I think it would be good. If you get a letter from Angela Rudd she is my best friend. Well to tell you the truth she's an enemy really. She is super active. But any way she loves space. Well I gotta go By.

Your fan,
Jessie,

System Tested

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user would take only what was needed for the particular mission.

The NDLM has three primary subsystems: data management with limited storage, a radio frequency (RF) and antenna control.

The data management subsystem handles data in three partitions—300 megabits per second (mbps) to 20 mbps, 20 mbps to 3 mbps and 3 mbps to 125 bps—for payload data and telemetry acquisition; ground command and telescience processing and execution; data storage facilities to 20 mbps; and on-board data processing.

The RF subsystem will receive and transmit signals through space to and from NASA network terminals.

The antenna control subsystem attaches the antennas to the structure of the spacecraft, moves the antenna beams as commanded by a distributed processor system and deploys and retracts the antennas, as required.

Hockensmith said the NDLM concept was developed from research conducted at GSFC over the past 5 years and is unique because of its adaptability and simplicity.

Spelman Scholarship Winners Visit Goddard

Under a grant from NASA, the Spelman College, Atlanta, GA is sponsoring a Women's Science and Engineering Scholars Program. This program provides scientifically-talented minority women with the opportunity to pursue undergraduate studies in science and engineering. Two young women from the Baltimore/Washington area have been selected to participate in the program. They are Martilla Rene Jones, Ft. Washington, MD and Monica Lynn Briggs, Baltimore, MD. Martilla and Monica will enroll at Spelman College as freshmen in August 1987 and will participate in a ten-week research experience next summer at Goddard.

SCHOLARS—**Pictured: (left to right) On a recent visit to GSFC, Dr. Lewin Warren, Deputy Assistant Administrator for Equal Opportunity Programs, and Dillard Menchen, Chief, Equal Opportunity Program Office introduced scholarship winners Martilla Rene Jones and Monica Lynn Briggs to Center Director Dr. Noel W. Hinners.**

Goddard Hosts Small Minority Business Conference

There was something for everyone at the Fourteenth Annual Small and Small Disadvantaged Business Conference held in the Building 8 Auditorium on Wednesday, May 20.

The conference brought together small and disadvantaged companies with representatives from Goddard's scientific, technical and administrative areas to discuss the Center's needs and how they may be filled by the companies.

The conference was a place where small business representatives could ask questions about how to do business with Goddard and talk directly to the people who might profit from their services.

More than 400 companies were represented, according to Franz Hoffman, Head of the Procurement Analysis Branch.

The Small Business Administration and local government agencies provided counselors for the conference and several of Goddard's prime contractors provided information on their company's subcontracting opportunities.

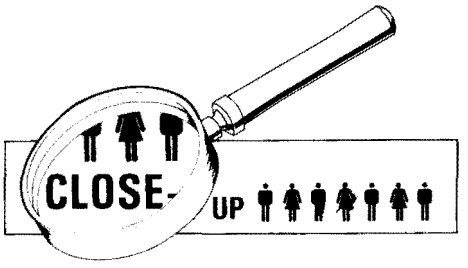
NASA Establishes Office of Exploration

Dr. James C. Fletcher, administrator of NASA, announced the creation of an Office of Exploration to coordinate agency activities that would "expand the human presence beyond Earth," particularly to the Moon and Mars.

"There are considerable—even urgent—demands for a major initiative that would re-energize America's space program and stimulate development of new technology to help the nation remain preeminent both in space and in the world's high-tech market place," Dr. Fletcher said.

"This office is a step in responding to that demand," Dr. Fletcher said. "It will analyze and define missions proposed to achieve the goal of human expansion off the planet. It will provide central coordination of technical planning studies that will involve the entire agency. In particular, it will focus on studies of potential lunar and Mars initiatives."

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



Congratulations to **JOHN ADOLPHSEN**, Code 311, who has completed his 40th year of service with the Federal Government. At GSFC, he has served as an engineer on projects such as Orbiting Solar Observatory, Aeros, Radio Astronomy Explorer, and the Earth Resources Technology Satellite. Adolphsen has made valuable contributions in the electronic parts area in the use of scanning electron microscopes for microcircuit evaluation, the application of particle impact noise detection tests, and the understanding of single event upsets in semiconductors.

MEAD

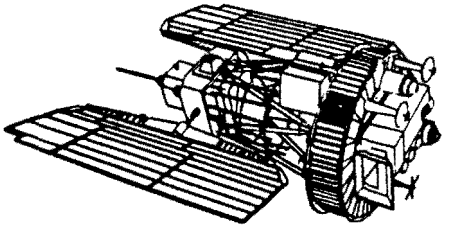
DR. JAYLEE MEAD, Assistant Chief of the Laboratory for Astronomy and Solar Physics, Code 680, has been selected Associate Chief of the Space Data and Computing Division, Code 630. In the new position, she will be the NASA coordinator for the recently-established Center of Excellence for Space Data and Information Sciences (CESDIS) (see story page 3). Mead also will serve as the principal liaison to the Goddard, national and international communities in the area of astronomical data. She will continue her own research on computerized astronomical data bases and data retrieval as well as her chairmanship of the Goddard Scientific Colloquium Committee.

Retirees

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

	Code	Years
Cheek, Frank	480	23
Federline, Marion F.	731	30
Gasch, Elizabeth M.	231	30
McKiernan, John W.	551	35
Putney, William D.	631	30
Ratliff, Thomas H.	735.1	32
Travis, Elmer W.	731	32

Here's one to GRO on . . . A model of the Gamma Ray Observatory (GRO) was presented to Command Management System Manager **ALLEN JOHNS** (left) by Director of Flight Projects William Keathley (right) for Johns' outstanding contribution to the GRO project. Dennis Ellsworth of the Marshall Space Flight Center and John Macri of the University of New Hampshire also received models for their contributions to the project.



Nominations are being accepted for the **WILLIAM T. PECORA AWARD** for outstanding contributions toward the understanding of the Earth by means of remote sensing. The award is sponsored jointly by NASA and the Department of the Interior. Know of an individual or group that might qualify? Contact NASA's Incentive Awards Board at 453-2593 for more information.

"Flight Path to the Future" is the theme of NASA's exclusively audio-visual exhibit at the 37th Paris Air Show, Le Bourget, France. The show opened on June 11 and will run through June 21. Located in the United States Pavilion, the exhibit will focus on the advances in aerospace research, challenges of the future in space and the people of NASA.

Blood Donors

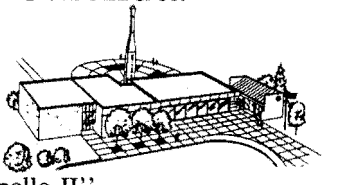
Following is a list of Goddard Donors who were cited by the American Red Cross with gallon pins at the Bloodmobile of June 3, 1987:

Name	No. of Gallons
Tad Blanchard	1
Gilberto Colon	2
Arnold Eudell	2
John Howie	1
Joseph Iffrig, Jr.	1
Pat Kilroy	2
Landis Markley	7
Paul Newman	1
Carl Palladino	1
Robert Price	4
John Robinson	2
Andrew Szymkowiak	3
Paul Trahan	2
Barbara Vargo	2
Mary Walsh	1
Kristin Wunderlich	1

THANK YOU, Goddard, for supporting the urgent need for blood in our community! All special orders for blood for patients in hospitals were met!!!

The next bloodmobile visit will be on August 5, 1987 from 8:30 a.m. to 1:30 p.m. in Bldg. 8 auditorium.

Visitor Center—July Calendar



July 5 — Model Rocket Demonstration
Launch — 1 p.m.

July
11 & 12 — Commemorative Films — 1 p.m.
"The Mission of Appollo/Soyuz"
"Eagle Has Landed: The Flight of Apollo II"

July 19 — Model Rocket Contest — 1 p.m.
(Rain Date — July 26)

July 26 — Special Tour: Bldg. 3/4—on the hour
Space Telescope Operations Control Center,
NASA Communications, and Flight
Dynamics Facility.

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.

Portable Ground Stations Test Satellites

by David Thomas

TEST VAN—**NASA/Bendix engineers perform operations in the compatibility test van during testing in Phoenix, AZ for a modular data handling and linking system adaptable to any satellite. Pictured: (Front to back) Dave Bennett, Jack Long, Joe Baros.**

When the patient can't go to the hospital the doctor has to make a house call. So, when it's unfeasible for satellites to be brought to Goddard to undergo compatibility tests with NASA's communications networks, a Center-managed government/contractor team assembles its operating tools and makes "house calls" to various spacecraft manufacturing sites throughout the U.S., using one of three Compatibility Test Vans (CTV).

These vans are, in effect, portable ground stations that test the telecommunications systems aboard communications satellites prior to launch to verify the spacecraft's compatibility with NASA tracking systems. The vans can "look like" NASA's ground and space communications networks, simulating either at various spacecraft manufacturer's sites.

Satellites must communicate with Earth using receive and transmit signals, which are used to track the satellite, monitor its health and pass on scientific data. To communicate successfully, the satellite's transmitting and receiving equipment must be working on the same frequency as equipment on the ground and in other satellites.

This is where the 24-member government/contractor team enters. They travel to wherever the satellite is being built and test it. You might call them doctors making housecalls across the country. And just as a doctor's housecall is nothing new, the CTVs have been around for a while.

"The van testing started 20 years ago," said Tony Comberiate, head, Goddard Compatibility Test Section. "They were first used in 1967 to conduct tests at the spacecraft contractor's plant."

But NASA's compatibility testing started in 1962 at Blossom Point, MD. When that facility was closed in 1965, all compatibility test functions were moved to the Network Test and Training Facility (NTTF) (Building 25) at Goddard, where virtually all network-supported scientific satellites were tested.

The mid-1960s saw the advent of larger and more complicated satellites, requiring more extensive satellite tests before the spacecraft's construction was completed. Also, transporting some of the larger satellites to the NTTF was not feasible. The compatibility test vans solved these problems.

"The vans alleviated tight time schedules and resulted in overall cost savings for the spacecraft projects," Comberiate said.

Each van is 45 feet long and weighs 57,000 pounds. A 400-horsepower Cummings diesel engine powers the tractor that pulls the 40 tons of equipment around the country. Thirty racks of electronic test equipment complement the 9,000 feet of cable running through the vehicle.

Sidestepping through the van during peak operations, a spectator might feel "sandwiched in" between the columns of electronic equipment. "It slewed off a negative five degrees in azimuth," is some of the jargon you might hear during a test were you inside the van. This reference was to the position of one of the antennas used in the tests.

For the most part, however, the van engineers can express their work in basic terms: "We just make sure the satellite can communicate with NASA's ground and space communications networks prior to its launch."

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 for people like:

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).

Space Data Consortium

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researchers can work on NASA problems at their home institutions and share their experiences via communications network meetings."

In explaining the need for the research facility, Halem cited rapidly-evolving technology in the computing arena as outstripping our ability to keep abreast of state-of-the-art advances in space science.