National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

Greenbelt, Maryland / Wallops Island, Virginia

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GOES-I launched into orbit

by Allen Kenitzer

Years of planning, designing and building culminated earlier this month when the Geostationary Operational Environmental Satellite (GOES-I) was launched from Cape Canaveral Air Force Station, Fla., on April 13 at 2:04 a.m.

GOES-I is a geostationary weather satellite developed and launched by NASA for the National Oceanic and Atmospheric Administration (NOAA). NASA and NOAA are in a cooperative program to continue the GOES system with the launch of new generation Geostationary Operational Environmental Satellites (GOES I-M) throughout this decade.

"GOES-I will provide high-quality atmospheric images, temperature and humidity profiles, wind velocity data and severe-storm coverage of Earth's western hemisphere," said Dr. John M. Klineberg, Goddard center director. "We're all very pleased with the NASA/NOAA partnership and look forward to the launch, deployment and operations of this next series of GOES weather satellites."

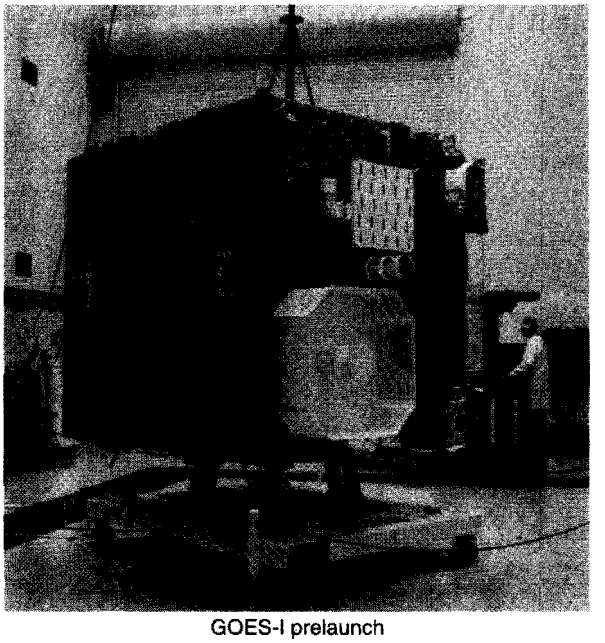
"A lot of people – professional meteorologists, atmospheric scientists, and those associated with and in the project – anxiously awaited the GOES-I launch and are just as anxious about the checkout," said Rick Obenschain, GOES project manager, Code 415. "It's really exciting!"

Goddard responsibility

Goddard is responsible for the procurement, development and verification testing of the spacecraft, instruments and unique ground equipment. GSFC also is responsible for the initial in-orbit satellite checkout and evaluation following separation of the spacecraft from the launch vehicle. Once the satellite is launched and checked out, NOAA assumes responsibility for the command and control, data receipt and product generation and distribution.

NASA and NOAA jointly design, develop, install, and integrate the ground system needed to acquire, handle, process and disseminate the data from the sensors on the GOES I-M satellites. NOAA is responsible for program funding and the in-orbit operation of the system and also determines the need for satellite replacement.

Each satellite in the series carries two major instruments: an "imager" and a "sounder." These instruments acquire high-resolution visible and infrared data, as well as temperature and moisture profiles of the atmosphere. They continuously transmit these data



GOES-I prelaunch

to ground terminals where the data are processed for rebroadcast to primary weather services in the United States and around the world, including the global research community.

Performance

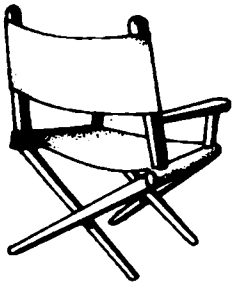
The GOES I-M system will perform acquisition, processing and dissemination of imaging and sounding data; acquisition and dissemination of Space Environment Monitor data; reception and relay of data from ground-based Data Collections Platforms situated in carefully selected urban and remote areas to the NOAA Command and Data Acquisition station, and a continuous relay of Weather Facsimile (WEFAX) and other data to users. It also will serve as a relay of distress signals from people, aircraft or marine vessels to the search and rescue ground stations of the Search and Rescue Satellite-Aided Tracking (SARSAT) system.

GOES system in weather forecasting

The GOES system is a basic element of U.S. weather monitoring and forecast operations and is a key component of NOAA's National Weather Service operations and modernization program. Spacecraft and ground-based systems work together to accomplish the GOES mission of providing weather imagery and quantitative sounding data that form a continuous and reliable stream

Continued on page 3.

Directors' Dialogue



Editors Note:

Because of space and time limitations some questions submitted for Director's Dialogue may not be answered in print. For that reason we ask that you include your name and code when submitting a question this will enable us to see to it that all questions are answered.

Q: Why is maternity considered a medical emergency?

A: The Leave Transfer Program allows employees to transfer accrued annual leave to other employees (leave recipients). To become a leave recipient, an employee or family member of an employee must have a clearly documented medical emergency that is likely to or will require an employee's unpaid absence from duty which would result in a substantial loss of income.

Maternity, supported by medical documentation, is a medical emergency for purposes of leave transfer. The Pregnancy Discrimination Act of 1978 prohibits excluding maternity as a medical emergency.

The nature of the leave transfer program assures that employees donating leave determine to whom and under what circumstances they will donate their leave. Names of leave recipients and information pertaining to the kind of medical emergency (when release is permitted by the leave recipient) are available in Room 160 of Building 1 at Greenbelt, or Building F160 at Wallops.

Roger L. Jenkin, director,
Human Resources,
Code 110

Q: Government and private trucks/vans parked in front or at the delivery entrances of GSFC buildings seem to keep their engines running while the drivers conduct business lasting more than a minute or two. Is this good for the health of the vehicles or is it done to keep the cab warm during the winter months and cool in the summer? Should this practice be discouraged to help the pollution and energy use problems?

A: For all safety reasons, all vehicles should be turned off regardless of the weather conditions, if the vehicle is to be unattended. Via a "Reminder to Operators of GSFC Vehicles," all operators of GSFC-owned vehicles have been instructed to turn off any unattended vehicles and remove the keys anytime the vehicle is not in motion. This reminder is posted in the dispatch offices at Greenbelt and Wallops and is given to each operator upon checking out a vehicle. Organizations having permanently assigned vehicles have also been given a copy of this reminder.

Unattended vehicles left running should be reported by vehicle tag number to Code 234 at x6-7677 for Greenbelt, and Code 233 at x7-1647 for Wallops. If incidents are observed involving commercial vehicles or privately-owned vehicles, report these by tag number to the appropriate commercial company or to Security at extension x6-7211 for Greenbelt and x7-1916 for Wallops.

Sherry Foster, director
Management Operations
Directorate,
Code 200

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

Prestigious awards go to space telescope team

by Jim Elliott

Goddard's Hubble Space Telescope (HST) recovery team is being recognized with prestigious awards from a number of the Nation's leading aerospace organizations.

Probably the most significant honor is the Robert J. Collier Trophy, given annually by the National Aeronautic Association, which will be presented to Joseph H. Rothenberg, formerly associate director of Flight Projects for HST at Goddard, in ceremonies in Washington May 6. He will share the award with recovery team leaders from the Johnson Space Center, Houston, Texas, and the Kennedy Space Center, Fla., as well as with the STS-61 astronaut crew.

Rothenberg represented the recovery team on March 18 when he received the Nelson P. Jackson Aerospace Award from the National Space Club at the Goddard Memorial Dinner in Washington, D.C.

Frank Cepollina, manager of Goddard's Flight Systems and Servicing project, also was honored by the National Space Club during the Goddard Memorial Dinner. He received the Eagle Manned Mission Success Award for his "pioneering" efforts in on-orbit servicing. The citation mentioned both his work with the Solar Maximum Mission satellite repair on the STS-41C shuttle mission in April 1984 and on the Hubble servicing mission last December.

The award was established through a gift to the Space Club's Scientific and Educational Foundation by the International Technology Underwriters in honor of the STS 51-1 crew, which retrieved Palapa B-2 and Westar VI in November 1964. The crew was composed of Frederick Hauck, commander; David Walker, pilot; and mission

Continued on page 5.

Goddard helps battle outgassing

by William A. Campbell, Jr.

Have you ever wondered about that film on the inside of your car's windows? And the film on the inside of your home's windows, or that film on your bathroom mirror? Goddard's Materials Branch, Code 313, has. In fact, it has studied the problem intensely. The film is called "outgassing" and comes from a number of sources—from the vinyl seat covers in your car, to cigarette smoke or cooking grease in your home.

These outgassing products are spontaneous evolution of gases, vapors and decomposition products from materials. The evolution may be from the release of molecules on the material's surfaces that have been deposited there during exposure to a molecular environment, or from the molecules released within the material from its thermal decomposition, sublimation or evaporation.

In a vacuum

For organic materials, which are the most common and largest outgassers, the outgassing originates from surface evaporation, evaporation of solvents used within preparation and from unreacted or broken molecular chains.

Outgassing is accelerated by increasing the temperature and when carried out in vacuum. You may ask: What can be done to remove or dispose of the outgassing film's deposition on nearby surfaces? If it is a window in your house or car, you can just clean it off.

But what if the window is a detector window in a weather satellite, or a mirror on a very sensitive optical module in a space telescope instead of your bathroom mirror? Do you clean it off? Can you clean it off? Probably not.

The deposits of outgassed molecules on a surface alter the surface properties. The contamination may affect the optical performance of lenses, mirrors, detectors, thermal control surfaces and electrical contacts, resulting in performance loss or loss of an instrument. Also, outgassed molecules in the field of view of an instrument can result in loss of visibility and detection of weak sources of energy.

What can be done

So, what can be done to prevent those objectionable consequences of outgassing? Or what has already done?

Routinely, materials that are selected for space flight applications are inherently low outgassing materials, or they are cured to remove most of the outgassing products. In spite of these precautions, there are still cases where extremely sensitive components may be compromised by minute quantities of outgassing products. In these instances, various types of shielding and venting can be employed to protect these surfaces from contaminants.

Starting point

In the late 1960s, the Stanford Research Institute, Palo Alto, Calif., and the Jet Propulsion Laboratory, Pasadena, Calif., developed a method to determine the degree of outgassing of a material and established criteria for the acceptance projection of the materials for space applications.

An apparatus was designed to investigate this phenomena in a vacuum environment. An operating procedure was produced which, with some modifications over time by facilities engaged in this research, has evolved into the American Society for Testing and Materials (ASTM) specification known today as ASTM E-595-90 "Standard Test Method for Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment." This gives us a basic starting point to select "clean" materials to use in our space flight applications.

One of the original laboratories performing these tests was Goddard's Materials Branch, Code 313. Located in Building 30, the "Outgassing Facility" continues to perform this test method and accumulate data.

Since 1967, the data have been made available to the aerospace industry as a NASA reference publication and the Materials and Processing Technical Information Service (MAPTIS) data bank through the Marshall Space Center, Huntsville, Ala. All data gathered by the GSFC Materials Branch has been furnished to MAPTIS. Other facilities also have made their data available, although some of them do not conform to the strict requirements of ASTM E-595-90.

Consider this, from a 100-milligram sample, or one-tenth of a gram, smaller than a black-eyed pea, enough outgassing product can evolve to cover the area of a 50-cent piece, with liquid droplets running down the surface, or forming a film through which you cannot see your reflection. Dirty? You bet! But these materials can be eliminated by compliance with ASTM E-595-90 data, using only the cleanest of fabrication materials. All personnel involved with construction of spacecraft, or any part of a spacecraft, should be aware of this need for cleanliness in the materials they choose for their fabrication, and they take full account of the results of the outgassing test in modeling their systems for contamination evaluation and prevention.

The latest edition of the GSFC data bank, RP 1124 Revision 3, "Outgassing Data for Selecting Spacecraft Materials," dated September 1993, can be obtained from Code 313 (in hard copy) while supplies last. It can then be purchased through the Center for Aerospace Information (CASI) and the National Technical Information Service (NTIS). Contact Bill Campbell, at x6508, for more information.

Prestigious awards

Continued from page 2.

specialists Joseph Allen, Anna Fisher and Dale Gardner. Allen and Gardner performed two ExtraVehicular Activities.

Rothenberg, who now works in the private sector with Defense Systems, Inc., of McLean, Va., has been named an Aviation Week Magazine Laureate for his leadership on the Hubble project. He was to receive that honor in ceremonies at the Air and Space Museum April 13.

Rothenberg also is to receive the American Institute of Aeronautics and Astronautics (AIAA) Goddard Astronautics Award for his leadership on the project. That award is to be given in ceremonies in Arlington, Va. during the AIAA's Global Air & Space Conference May 3 to 5.

From airplanes to chemistry

By Karen W. Davis

Dr. Arnold Torres, chief of the Wallops Flight Facility Operations Division, Code 830, is a man on a mission. Although chemistry was not his original career choice, a love for the internal makeup of the atmosphere led him to his present position at Wallops.

Dr. Arnold Torres

"Chemistry was not my original career choice. A boyhood fascination with airplanes as I grew up near a tiny airport in rural Louisiana led me to want to become a pilot. But a neighborhood kid converted a part of his father's garage into a laboratory, and we had so much fun tinkering in his lab that I did the same thing in my father's garage. The two of us spent a few years terrorizing the neighborhood by launching homemade rockets in random directions with rocket fuels that were closer to explosives than fuels. Eventually, the other kid lost interest, but I went on to Louisiana Polytechnic Institute and the University of South Carolina for a B.S. and a Ph.D. in chemistry," said Torres.

After graduate school, Torres joined the faculty of the chemistry department at Old Dominion University, Norfolk, Va. It was there that he met his wife Linda, a dental hygienist from upstate New York, who was also a faculty member. They now have two children, both in college.

According to Torres several factors influenced his career choice. "Three things brought me to Wallops: a career interest in atmospheric chemistry, a love for the beach dating back to my summers as a lifeguard and a fondness for the Eastern Shore developed while my family and I were camping on Chincoteague."

Torres took two years of postdoctoral studies in atmospheric chemistry at Drexel University, Philadelphia, Pa., where he was involved in developing and improving sensors for measuring atmospheric constituents. His work included an investigation into the performance of balloon-borne instruments used by Wallops for making stratospheric ozone measurements. He later took a position there as principal investigator for these types of measurements.

During his first 15 years at Wallops, Torres conducted laboratory and field studies aimed at better understanding the chemistry of the atmosphere. Stratospheric ozone measurements have been an important part of his work and have been used for special projects such as the ongoing study of the Antarctic "ozone hole."

In the Antarctic study, two members of his research team launched balloon instruments from research stations in Antarctica for three months while the ozone hole formed, then dissipated. Their data was transmitted over computer networks to his laboratory at Wallops, where it was processed and shared with other investigators.

In June 1993, Torres was appointed chief of the Operations Division in the Suborbital Projects and Operations Directorate at Wallops. In this position, he directs the Aircraft programs, Range Management, Data Acquisitions and Launch Vehicle Branches, which are responsible for daily operations, tracking, commanding and preparing rocket vehicles for launch.

Torres serves as a directorate representative to Goddard's Education Council. He also is a member of advisory boards for Opportunity Skyway and the Airway Science Program at the University of Maryland Eastern Shore.

As he looks toward the future, Torres says he thinks of the past. Torres describes the growing process brought about by changing times. "Like other federal agencies, we're being asked to downsize and streamline our organization. We're being asked to take more risks, and turn over to commercial organizations some tasks that formerly belonged to NASA. We're being asked to do more with less.

"This is an opportunity to return to the way NASA did business in its younger days, when it was a leaner and more focused agency. The toughest challenges I face today are those of redefining some of our division's roles and missions to accommodate these changes, to streamline and reorganize the division to better meet our new objectives and to maintain morale and motivation of our employees during the transition process," said Torres.

Goddard forms education council

Goddard represents a rich collection of people: engineers, scientists, technicians, administrative employees, clerks and typists. The Center is proud to believe it has the best people in these fields. Goddard also is a collection of supervisors, co-workers, parents, and individuals who are concerned about the future based on current information about the Nation's education progress.

One year ago, the agency published "NASA's Strategic Plan for Education, A Strategy for Change: 1993-1998." Since that time, GSFC , under the leadership of Deputy Director Peter Burr, identified a team to prepare a strategic plan for Goddard to articulate a direction for the design and guidance of the Center's education programs. That plan will be distributed to employees this spring. In developing the plan, an inventory of more than 70 existing programs indicated a vigorous and all-encompassing effort to improve education from many sources at Goddard. One specific outcome of the GSFC Education Strategic Plan is the creation of the Goddard Education Council.

Membership of the Education Council includes representatives from all directorates as either active or corresponding members. Council members are: Peter Burr, Code 100; Wayne Boswell, Code 110; Dillard Menchan, Code 120; Janet Ruff, Code 130; Dr. Gerald Soffen, Code 160; Lynn Donnelly, Code 284.6; Richard Tagler, Code 500; Joseph Alexander, Code 600; Mitchell Brown, Code 700; Arnold Torres, Code 830; and Dr. Louis Walter, Code 900. Corresponding members are: Sherry Platt, Code 150; Dave Cleveland, Code 300; and Howard Ottenstein; Code 400.

The charter of the council is to coordinate and optimize resources where possible, across the directorates, the many education programs that are implemented on site; apply a set of guidelines to improve programs and determine the feasibility of new ones; communicate with many audiences about GSFC's efforts, and maintain a data base of education programs and activities.

The council looks forward to the Center's continued commitment to education from kindergarten to higher education and urges employees to work with their directorate representatives, members said. Watch for the Goddard Education Strategic Plan, to be distributed by early May.

Goes-I

Continued from page 1.

of environmental information for weather forecasting and related services.

"The new series of GOES satellites provides significant improvements over the previous GOES system in weather imagery and atmospheric sounding information," said Dr. Dennis Chesters, GOES project scientist, Code 913. "This enhanced system improves weather services, particularly the forecasting of life- and property-threatening severe storms."

GOES I-M represents the next generation of weather satellites and introduces two new features. The first, "flexible scan," offers small-scale area imaging that lets meteorologists take pictures of local weather trouble spots. This allows them to improve short-term forecasts over local areas. The second feature, "simultaneous and independent imaging and sounding," is designed to allow weather forecasters to use multiple measurements of weather phenomena to increase the accuracy of their forecasts.

Coverage

The GOES I-M system serves a region covering the central and eastern Pacific Ocean; North, Central and South America; and the central and western Atlantic Ocean. Pacific coverage includes Hawaii and the Gulf of Alaska. This is accomplished by two satellites, GOES West at 135 degrees west longitude and GOES East at 75 degrees west longitude. A common ground station at Wallops Flight Facility, Wallops Island, Va., supports the interface to both satellites. The NOAA Satellite Operations Control Center in Suitland, Md., provides spacecraft scheduling, health and safety monitoring and engineering analyses.

What's Up? April 1994

Solar, Anomalous and Magnetospheric Particle Explorer
Days in orbit: 606
The control center is still being upgraded for the new Fast Auroral Snapshot (FAST) Explorer mission, which is scheduled to launch in August. SAMPEX continues to acquire all science and engineering data without any significant problems or operational errors.

Extreme Ultraviolet Explorer
Days in orbit: 630
The EUVE spacecraft marked its 10,000th revolution on-orbit in late March by slewing to observe a bright, unexpected target of opportunity in the direction of the brilliant B-type star Hadar in the southern constellation of Centaurus. All payload and platform subsystems continue to work flawlessly.

International Ultraviolet Explorer
Days in orbit: 5,940
During March IUE observed comet McNaught-Russell (1993v). This comet has an orbital period of about 1440 years, and this object may represent the return visit of a very bright comet observed in China in 574 AD. Further IUE observations may take place early in April, after the comet has passed the point nearest the sun in its orbit.

Hubble Space Telescope
Days in orbit : 1,345
HST is back to normal science operations following the first servicing mission. Only a few Servicing Mission Observatory Verification (SMOV) activities remain to be completed; they are scheduled along with regular science programs and were to be completed by April 3. All scientific instruments are operating nominally. Project efforts already are being focused on preparation for the second HST servicing mission, currently targeted for a launch readiness date of February 15, 1997.

GAS flys on STS-59 as Endeavour studies the Earth's environment

Space Shuttle Endeavour on mission STS-59 lifted off from the Kennedy Space Center (KSC) in Florida on Saturday, April 9. The flight represented the continuation of NASA's Get Away Special (GAS) experiments project. GAS is a Goddard-managed project that gives the average person a chance to perform experiments in space on a shuttle mission. In addition, Three Goddard scientists were among 49 international scientists taking part in environmental investigations during STS-59 for the Space Radar Laboratory payloads.

Three GAS payloads flew on STS-59: A New Mexico State University experiment to examine the freezing and crystallization process of water in space; an experiment to explore thermal conductivity measurements on liquids in microgravity, sponsored by the Matra Marconi Space of Paris, France; and the Society of Japanese Aerospace Companies, Inc., experiment to determine the response of small fruiting bodies to microgravity.

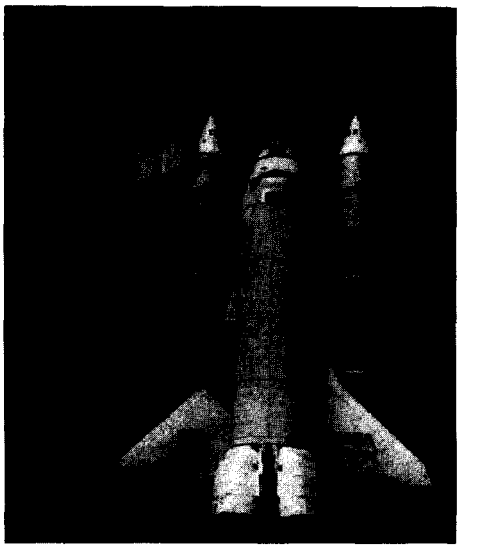
This mission is part of NASA's Mission to Planet Earth. There is particular interest in studying vegetation coverage, the extent of snow packs, wetland areas, geologic features such as rock types and their distribution, volcanic processes, ocean wave heights and wind speeds.

There are more than 400 sites on Earth where data was taken during the mission. Also during the mission, "ground-truth" teams at different sites made ground- or sea-based measurements of vegetation, soil moisture, sea state, snow and weather conditions as the shuttle passed over their sites.

Studying how the Earth's global environment is changing were Dr. James Wang, Code 975, research scientist in the Laboratory for Hydrospheric Processes; Dr. Jon Ranson, Code 923, research scientist in the Laboratory for Terrestrial Physics; and Dr. Ted Engman, Code 974, research scientist in the Hydrological Sciences Branch.

Wang and Engman collected data on soil moisture, while Ranson looked at forests. "We need data of northern forests," Ranson explained, "to develop models of how forests grow because of the changes in climate or human activity."

He said the science team had been anticipating this launch since 1986.



Space Shuttle Endeavour ready for launch.

Ranson looked at Boreal forests—forests that grow in the cold region of North America, Europe and Asia above 45 degrees latitude. By studying the short-term and long-term changes in forests, scientists can determine what effects changing environmental conditions and land use have on the forests and, in turn, on global climate change.

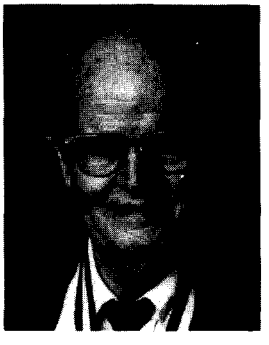
Wang has specialized in using satellite observations to study the Earth's hydrology since he came to Goddard 16 years ago. During the mission, he performed ground truthing at one of many different sites where investigators made ground- or sea-based measurements of vegetation, soil moisture, sea state, snow and weather conditions as the shuttle passed over their sites. These data will be supplemented with information taken from aircraft and ships to ensure an accurate interpretation of the data taken from space, Wang explained.

"The shuttle should provide us with some good images of soil moisture," said Engman. "We need radar to explore inaccessible regions of Earth's surface....We've obtained aircraft data before, but this should give us a much better picture."

The scientists used the Spaceborne Imaging Radar-C/X-Band Synthetic Aperture Radar (SIR-C/X-SAR) and the Measurement of Air Pollution from Satellite (MAPS) instruments. The imaging radar of the SIR-C/X-SAR instrument has the ability to make measurements over virtually any region at any time regardless of weather or sunlight conditions, they said.

Memorial

James Kerley, Jr., 73, Code 754, a productive inventor and a Goddard contributor to space commercialization, died last month. Kerley was born in Erie, Pa. In 1992, Kerley was named an "Inventor of the Year" by Design News, for his innovative "climbing robot," which relied heavily on his unique cable compliant joint design. The climbing/crawling robot could go places no other robot had been able to go before. Experts consider it a giant step in robotics. Its concept addresses some of the major problems that have plagued robotics design.



James Kerley

Kerley began his Goddard career in March 1961 after selling the rights to 11 of his early domestic patents. During his 32-year career at GSFC, he increased his domestic patent count to 25, with numerous foreign patents awarded or pending.

Kerley was the only experimental techniques technical specialist in the Code 754 Environmental Test Engineering and Integration Branch and only one of seven at Goddard. He was a recognized expert in the application of advanced theories, principles and practices in the field of structural and mechanical design.

Kerley's inventions are as numerous as the number of years he worked as an engineer. His name is associated with some 50 inventions. "I consider myself a multi-cultural engineer. I've been to every state and most countries," said Kerley in an earlier interview.

Kerley has been described as one of the more prolific inventors at Goddard. He had a very modest demeanor. Kerley emphasized time and again that the key to his success was teamwork. "I cannot work alone," he said.

Kerley is survived by his wife of 46-years, Mary A. Kerley of Greenbelt, five children, 11 grandchildren and the entire Goddard community.

Goddard employees earn trip to view shuttle launch

Seventeen Goddard employees and contractors traveled to the Kennedy Space Center (KSC), Fla., in March for a week of STS-62 launch activities as honorees of the Manned Flight Awareness (MFA) program.

The MFA launch honoree award is the highest and most prestigious award available to employees of the NASA/industry space shuttle/payloads team. This NASA-sponsored award recognizes individuals for their exceptional dedication to quality work and flight safety. Honorees are selected for their outstanding contributions to the space shuttle/payloads program.

The high point of the week was the thundering liftoff of the STS-62 mission. In addition to a reception held in their honor, the honorees were treated to a VIP tour of KSC and a visit to the Merritt Island Spaceflight Tracking and Data Network Tracking Station. Astronaut Winston Scott presented the Goddard honorees with their Certificate of Merit and honoree pin.

Launch honorees left to right:
First row: Robert C. Smith, Code 442; Peter M. Alea, Swales and Associates, Inc.; James R. Metzger, Code 722; John J. Scialdone, Code 313; Russell L. Werneth, Code 442; Marvin T. Walker, Computer Sciences Corp. (CSC); John P. Lynch, Code 553; and Kenneth W. Lavery, AlliedSignal Technical Services Corp. (ATSC). Second row: William H. Wynn, Lockheed Technical Services Corp. (LTOC); Gregory C. Andersen, LTOC; Timothy L. Jacintho, Loral AeroSys; Curtis Fatig, CTA INCORPORATED; Richard A. Beckwell, ATSC; Thomas R. Pfarr, CSC; Michael P. Schwegmann, CSC; and Kenneth A. Olson, Code 442. Not available for photo: Paul W. Richards, Code 714

RETIREES

Congratulations to the following employees who recently retired!

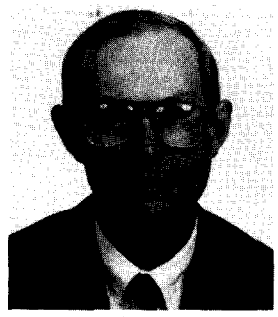
Name	Code	Yrs	Name	Code	Yrs
Robert Groves	550	41	Allen Walker	415	32
Charles Vermillion	930	36	Carol Taylor	244.3	32
Edward Rothe	735.4	35	Hugh Warren Jr.	261	32
Nicolas Mejia Jr.	734.4	35	Thomas Grenchik	506	30
Charles Dunfee	200	35	Harley Mann	531.3	29
Richard McGeehan	740	35	Richard Cory	713.3	29
William Dickinson	500	34	Donald Williams	916	28
John Donaldson	292	34	Paul Clohan	204	27
Don Stanfill	750	33	Mary Miller	696	25

Goddard's Hubble Space Telescope Project gets new leadership team

by Jim Elliott

Two men who played leading roles in the successful first servicing mission of the Hubble Space Telescope (HST) last December have been named to leadership positions with that project at Goddard.

Dr. John H. Campbell, Code 440, formerly deputy associate director of Flight Projects for HST, has been named associate director of Flight Projects for HST. Dennis McCarthy, Code 442, formerly deputy manager with the HST Flight Systems and Servicing Project, has been named deputy associate director of Flight Projects for HST.

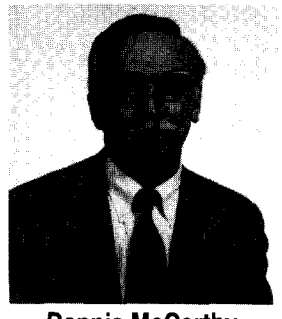


John Campbell

Campbell succeeds Joseph H. Rothenberg, who left NASA in February for employment in the private sector. McCarthy succeeds Campbell in the number two position with the program.

Campbell had been deputy associate director since February 1992. Prior to that assignment, from August 1988 to February 1992, he had been deputy manager for the Hubble Space Telescope Project-Goddard. He began his career at Goddard in September 1987 in the Mission Operations and Data Systems Directorate where he was systems engineering manager for the Flight Software Systems Branch.

Campbell received a bachelor of science degree in physics from Carnegie-Mellon University in 1964 and a master of science and a doctorate degree in physics from Purdue University in 1967 and 1969 respectively.



Dennis McCarthy

McCarthy had served as deputy project manager for HST Flight Systems and Servicing since September 1991. From October 1990 to September 1991, he was deputy program manager for HST at NASA Headquarters in Washington, DC.

Prior to that assignment, he had served at Goddard as associate director for the Space Sciences Directorate (January-October 1990) and as deputy project manager for Cosmic Background Explorer (COBE) from February 1983 to January 1990.

He is graduate of the University of Pittsburgh, where he earned a bachelor of science degree in aeronautical engineering in 1962. McCarthy began his career with NASA in August 1962.

Shuttle payloads monitored by students

by Leslie Bridgett

Imagine you are sitting in a control room for the space shuttle and are responsible for monitoring the temperature of an experiment in the shuttle bay. Behind you stand the scientists and engineers who are awaiting the results from the instruments under your watchful eye. Through your headset you can hear the commands between the Johnson Space Center, Houston, Texas, and the astronauts as you watch the events unfold before you on the television monitor.

For 30 students from DuVal High School, Lanham, aerospace team, these images describe the scene where they "staffed" consoles to support the Goddard Payload Operations Control Center (POCC).

Unique experience

Since May 1992, Goddard has invited students from DuVal to join the team in the POCC. The students help engineers monitor the thermal characteristics of payloads, which are experiments mounted in the shuttle bay. Constant monitoring is required because extremes in temperature may interfere with the performance of the instruments.

This unique experience was a vision of Chris Dunker, Code 740, payload deputy project manager. Since its inception in 1992, students have participated in the support of three payload experiments: the Attitude Sensor Package (STS-52), the Diffuse X-Ray Spectrometer (STS-54), and the Capillary Pumped Loop Experiment (STS-60).

During a recent mission students assisted Dan Butler, Code 724.2, chief investigator on the Capillary Pumped Loop Experiment. This experiment is a prototype for equipment that will regulate the temperature of the Earth Observing Satellite that is scheduled for launch within the next four years.

Prior to each mission the students meet the scientists and thermal engineers at a project briefing where they are given a capsulated version of the overall mission and a crash course in thermal engineering. The scientists use this opportunity to share the goals of their experiment and describe its design.

Common goals

The result is a perfect marriage of applied math, computer science and engineering as a means to answer a scientific question. For the students, these formerly segregated areas of study now focus on a common goal and their relevancy to solving real life problems becomes overwhelmingly apparent.

DuVal students Jay Tipnis (left) and Travis Bynum (right) monitor the temperature of the Capillary Pumped Loop Experiment from Goddard's Payload Operations Control Center during mission STS-60 as Chris Dunker, Code 740, (standing) and Dan Butler, Code 742.2, (seated) assist.

Students work in pairs around-the-clock for the duration of the mission in the POCC, where they are exposed to a variety of educational experiences.

At a glance, one can see that the control center serves as an interesting smorgasbord of career possibilities. During the mission, the facility becomes a surrogate home for chief investigators, thermal engineers, scientists, flight operations personnel, project managers and computer data technicians. It is truly a cross-section of aerospace careers.

In addition to career opportunities, the control center acts as a window through which students gain new insights into the activities of the aerospace industry. They watch as instruments, which represent years of planning and design, are launched into space. They listen as scientists await data from experiments and learn the answers to new questions in science and engineering. Following flight plans, students can monitor the daily routine of life in space and listen to dialogue between the astronauts and JSC's flight operations team. Ultimately, the students are part of a team, experiencing the joys of success and the disappointment of failure.

Although this has been an outstanding educational experience for DuVal students, the true measure of its worth will come long after the mission is over. For in education, the process is one of planting seeds.

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