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National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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February 1994 Vol. 41 No. 2

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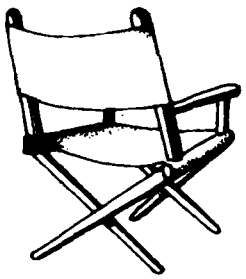
Goddard GAS Program celebrates 100th payload on STS-60

In 1982 NASA began flying small self-contained payloads to fully utilize the Shuttle's capacity not used by the major payloads. Available to the "man and woman on the street," the Get Away Special (GAS) Program presents a unique avenue to space experimentation. Anyone can perform small space experiments through the GAS Program.

On this last mission NASA celebrated the flight of the first 100 GAS payloads. GAS is managed for NASA by Goddard. The program has indeed functioned as envisioned, encouraging the use of space by all, enhancing education with hands-on space research opportunities, inexpensively testing ideas in space and generating new space activities.

A golden era in space cooperation began with the flawless liftoff of the Space Shuttle Discovery on Mission STS-60. The first shuttle mission of 1994 carried the first Russian cosmonaut, Sergei K. Krikalev, to fly on a U.S. space shuttle. This mission also represented the flight of the 100th Get Away Special (GAS) payload. STS-60 was a success for Goddard-managed payloads. There were four GAS and three Hitchhiker payloads aboard Discovery. All of the experiments turned on and operated successfully.



Directors' Dialogue

Q: With all of the spending cuts, specifically cash awards, why did the managers (GM employees) all get their yearly award? In my division, all of the managers got a cash award, but only one GS employee got a cash award. The reason given for only one GS cash award was budget cuts. It simply does not seem fair.

A: The Performance Management and Recognition System (PMRS) requires payment of PMRS awards. In October, PMRS awards for FY93 were made at all NASA Centers. The amount of each award and the number of managers receiving awards were determined by each merit pay unit manager. The PMRS system was abolished at the end of October.

With respect to the broader question about GS awards, each directorate received an awards budget for FY93. As a result of directorate and Center-funded awards in FY93, 350 quality step increases, 494 performance awards and 947 special act awards were granted.

While the Center was able to maintain a very healthy cash awards program in FY93, the budget in FY94 is likely to be very constrained. The level of funding for awards may be affected by such items as the general budget reductions, locality pay and other demands on the Research and Program Management budget. No allocation has yet been made to the directorates for FY94 awards. We'll be unable to make such an allocation until the budget picture is clarified.

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

Questions for Directors Dialogue may be sent in 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.

Hubble Space Telescope servicing manager honored

by Michael Finneran

Frank J. Cepollina, Code 442, manager of the Hubble Space Telescope Flight Systems and Servicing Project, has been selected to receive the 1994 National Space Club Eagle Manned Mission Success Award.

Cepollina is being honored "in recognition of his vision, pioneering development and leadership of on-orbit servicing of spacecraft, leading to the successful repair of the Hubble Space Telescope," according to the citation.

The Hubble Space Telescope, which is managed by Goddard, was serviced by astronauts aboard the Space Shuttle Endeavour during an 11-day mission in December 1993. During five days of spacewalks, Endeavour crew members installed equipment that enhanced the telescope's performance and compensated for the optical flaw discovered shortly after launch in 1990.

The award will be presented March 18 during the annual Goddard Memorial Dinner at the Washington Hilton Hotel in Washington, D.C.

The award was established in 1984 through a gift from the International Technology Underwriters to the National Space Club Scientific and Educational Foundation. It honors crew members of Space Shuttle Discovery mission 51-A in 1984 and their efforts to recover two failed satellites, PALAPA B-2 and WESTAR VI.

The award annually recognizes federal employees, contractors or grantees who, through direct effort, have influenced successful completion of one or more manned space flight missions by limiting or eliminating risks or hazard to the flight crew or mission objective.

NASA Wallops practices balancing act

by Keith Koehler

Scientific and communication satellites are launched routinely into space. Before many of these spacecraft can access space, however, a critical component of most of these satellites, the booster motor, must pass a fine balancing act at the NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va.

The Spin Balance Facility at Wallops is used for balancing satellite booster motors (apogee and perigee kick motors), satellites and sounding rocket payloads.

The balance facility, built in 1963, can handle motors weighing up to 30,000 pounds (13,608 kilograms). The machine that balances

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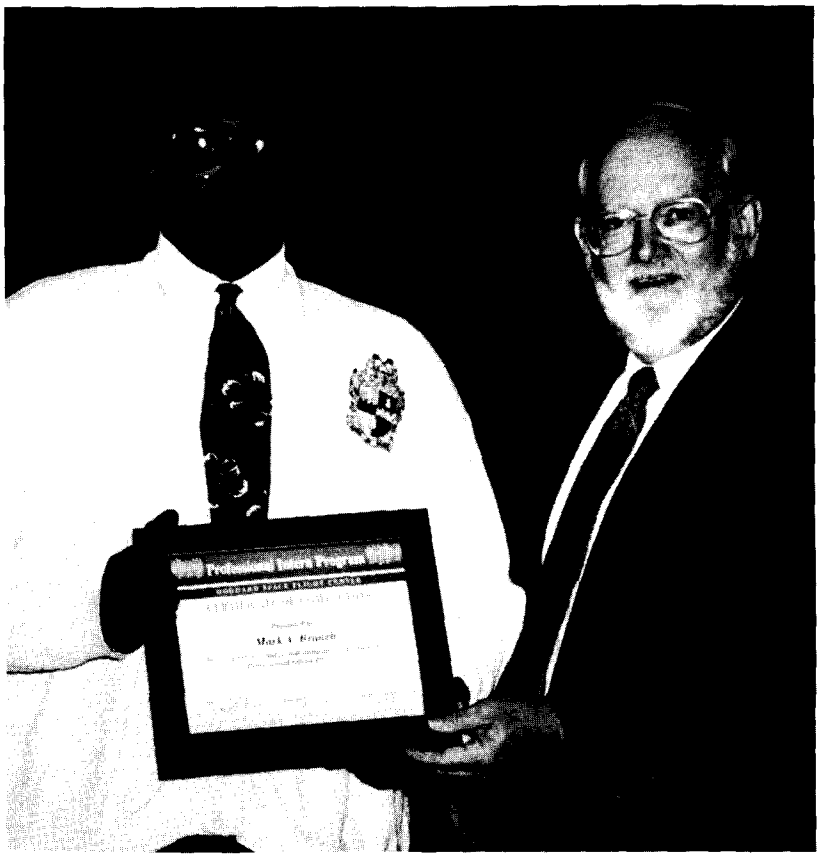
Goddard Professional Internship Program award ceremony held

Mark A. Branch, (left) Code 531.3, accepts a plaque commemorating his completion of Goddard's Professional Internship Program (PIP) from Goddard's associate director, Dr. James Trainor during the first PIP recognition ceremony held in the Building 8 auditorium. PIP is managed by the Office of Human Resources, Code 110, and has been a valuable program for developing entry level professionals at Goddard. More than 200 employees are in the program as trainees and volunteer mentors.



What's Up? February 1994

Upper Atmosphere Research Satellite (UARS)
Days in orbit: 880

Goddard's Upper Atmosphere Research Satellite (UARS) continues to collect data on the chemistry, dynamics and radiative inputs to the upper atmosphere.

The observatory is performing nominally supporting full instrument operations in backward flight, viewing the northern hemisphere, following a routine yaw maneuver on February 4, 1994.

All instruments are powered on and are conducting normal science operations except ISAMS and CLAES. The battery performance remains satisfactory.

International Ultraviolet Explorer (IUE)
Days in orbit: 5,879

January 26, 1994 marked the 16th anniversary of the launch of IUE.

The IUE project ran several remote observing sessions from its booth at the Washington AAS meeting in January. Guest observers at the meeting were able to see their raw data a few minutes after it was sent down from the IUE satellite.

IUE observations from Nova Cassiopeiae 1993 continue. This is proving to be one of the more interesting nova recently observed.

Cosmic Background Explorer (COBE)

The COBE mission was terminated in the last week of January. All end-of-life tests were completed, and the COBE Control Center has gone out of business. Some of the flight operations team will remain for another several weeks writing end-of-life reports and closing down of the project. The COBE spacecraft will be used by Goddard and the Wallops Flight Facility in Virginia as a communications test satellite for ground stations.

NASA'S Hubble Images comet on collision course with Jupiter

by Michael Finneran

These images of fragments of Comet P/Shoemaker-Levy 9 (1993e) were made by NASA's Hubble Space Telescope (HST). The cometary chunks are expected to plunge into Jupiter's atmosphere in July 1994. The comet was torn into numerous pieces by the massive planet's gravitational pull as it passed by Jupiter in Summer 1992.

The fragments are due to hit Jupiter in a 5-1/2-day period centered on July 19, possibly producing spectacular results depending on the size of the pieces. The fragments are expected to impact with an energy release many times that of nuclear warheads.

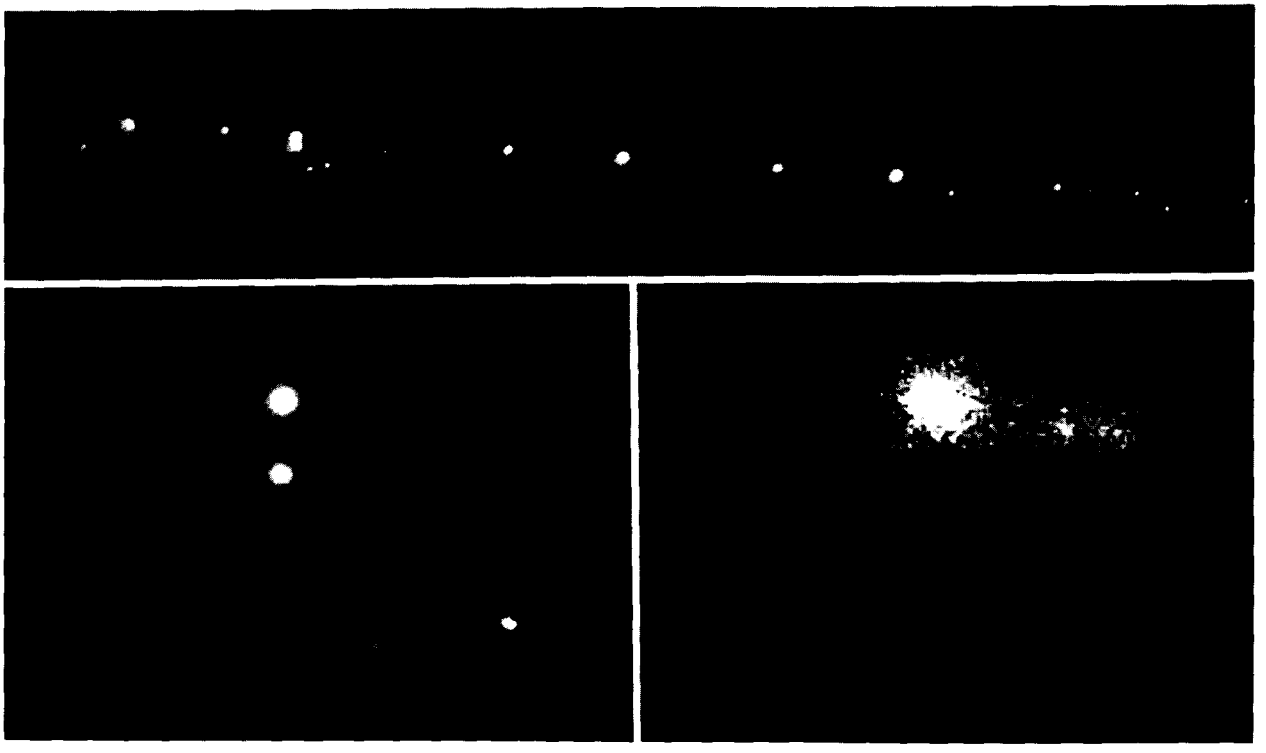
The 11 largest comet fragments are estimated to be 1.25 miles (2 kilometers) to 2.5 miles (4 kilometers) in diameter. Hubble first observed the comet on July 1, 1993. Recent images, taken using Hubble's newly improved optics between January 24 and 27, have given an even clearer view.

The new images taken by the Wide Field Planetary Camera II, indicate the comet will continue to fragment. Over the next few months, Hubble will monitor the comet's approach of Jupiter, which is some 500 million miles (805 million kilometers) from the Sun and is the largest of the nine planets in the solar system. (Earth is 93 million miles, or 150 million kilometers, from the Sun and is the fifth largest planet.)

The Wide Field/Planetary Camera II was provided by NASA's Jet Propulsion Laboratory in Pasadena, Calif. Hubble is managed by Goddard for the Office of Space Science at NASA Headquarters in Washington, D.C.

Comet P/Shoemaker-Levy 9 (1993e)

Hubble Space Telescope
Wide Field Planetary Camera 2



Upper strip: This mosaic image consists of two new Wide Field Camera images and one new Planetary Camera image. Twenty comet pieces are visible.
Lower right: This image was taken with the Planetary Camera before HST was serviced by astronauts during an 11-day mission in December 1993. The image is of the region of the brightest comet fragment. Four fragments are barely visible in this view.
Lower left: This image was taken with the Planetary Camera after the Hubble servicing mission, and the comet fragments can be seen much more clearly. While it is difficult to discern by comparing these before and after images, analysis shows the separations and orientations of the four fragments have changed dramatically in the 6-month span between the two exposures.

NASA announces software of the year award

by Dwayne C. Brown

NASA's Office of Safety and Mission Assurance (OSMA), Washington, D.C., in conjunction with NASA's Inventions and Contributions Board (ICB), has created the Software of the Year Award to give recognition to software or software technology used by NASA.

"Software and software technology are essential to the success of NASA missions. This award is equal in stature to the Inventor of the Year Award," said Fred Gregory, associate administrator for OSMA.

The award, which will include a plaque and a monetary award of up to $100,000 will be presented to authors of software programs or technologies promoted, adopted, sponsored and deemed significant in the performance of NASA space and aeronautics activities.

Entries will be judged by a NASA Software Award Review Panel comprised of software development experts. After its reviews, the panel will submit selections to the ICB. The panel may recommend a single monetary award of up to $100,000 for a major contribution, several lesser awards, or no award when, in its opinion, no major or significant contribution can be clearly identified. The award will be presented by OSMA and ICB officials in late November at Goddard's annual Software Engineering Workshop.

"Copies of the software, sample applications and data and a description of the technology must be included, in addition to documentation demonstrating the impact and degree of innovation and suitability of the entry. This information will be the primary data used by the panel in recommending awards," said Don Sova, manager for software engineering, NASA Headquarters.

Software programs are those packaged products submitted to the Computer Software Management and Information Center (COSMIC) at the University of Georgia. If submission is a software program, the software must be in the COSMIC inventory, in the process of submission to COSMIC, or legally disseminated via patent or copyright through a contractor with royalties to NASA.

Software technologies are nonpatentable concepts, processes or development aids that may by utilized in the production or maintenance of high quality software products. If the submission is a software technology, adequate documentation must be provided to, or be in the process of submission to, the National Technical Information Service (NTIS), Springfield, Va., to ensure availability.

Additional information on award criteria should be made through the NASA awards liaison officer at any NASA center or through the ICB. Entries and supporting material must be submitted to the NASA offices no later than June 1, 1994.

NASA Wallops practices balancing act

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these large motors is a Trebel FVD-3000 Aerospace Balancing Machine, the largest of its kind in the world.

Satellites and motors must be finely balanced to insure that the rocket flies its proper trajectory, prevent the spacecraft from tumbling, and to insure that excessive vibration does not damage the satellite. In addition, if the spacecraft is precisely balanced, fuel requirements for controlling the satellite in space can be minimized, thus reducing the weight of the satellite.

According to Bill Mittelmaier, technical officer of the balance facility, a 30,000-pound spacecraft or motor can be balanced to within accuracies of .07 ounces (two grams), or about the weight of a dime. This means that only two grams of imbalances would be left in the spacecraft or motor.

Mittelmaier said, "Eighty percent of apogee and perigee kick motors for U.S. geosynchronous satellites, 22,300-mile (35,881 kilometers) orbit, are balanced at Wallops." The facility also balances U.S.-built satellites and kick motors for foreign built satellites that fly on U.S. commercial launch vehicles, said Mittelmaier.

Wallops balances about 32 motors, six satellites and three sounding rocket payloads annually at the Spin Balance Facility. A large motor takes about two weeks to process and balance while a smaller motor can be prepared in about one day, according to Mittelmaier.

Typically a motor makes two trips to Wallops prior to flight. The motor is first balanced with no fuel. Then it is sent back to the motor manufacturer, which loads the fuel. After fueling, the motor is returned to Wallops for final balancing.

The Wallops balance facility has supported a variety of aerospace firms including TRW, Hughes, Martin Marietta, Thiokol, United Technologies and Rockwell. The firms reimburse NASA for the work performed at the balance facility.

Motors balanced at Wallops have flown on a variety of satellites including Clementine 1, Radcal, Intelsat VI and the Global Positioning Satellite System.

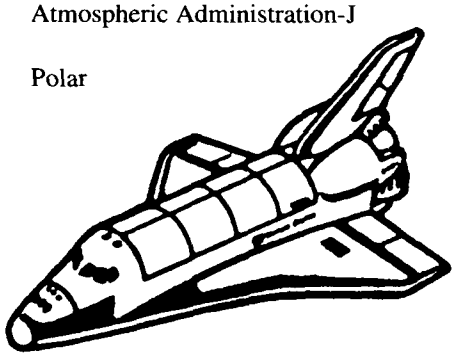
Looking Ahead...

Mixed Fleet Manifest - Remaining 1994 Launches

Space Shuttle Flight	Date/ Orbiter	Primary Payload
62	March Columbia	NASA Office of Aeronautics and Space Technology-02, U. S. Microgravity Payload-02, Dexterous End Effector, Shuttle Solar Backscatter Ultraviolet/ A-03, Limited Duration Space Environment Candidate Materials Exposure-03
59	April Endeavour	Space Radar Laboratory-1
65	July Columbia	International Microgravity Laboratory-2
68	August Endeavour	Space Radar Laboratory-2
64	September Discovery	Lidar In-space Technology Experiment, Spartan 204, Gas Bridge Assembly
66	October Atlantis	Atlas-03, Cryogenic Infrared Spectrometer Telescope for Atmosphere-01, Shuttle Solar Backscatter Ultraviolet/04
67	December Columbia	Astro-2

Expendable Launch Vehicles

Month	Launch Vehicles	Payload
April	Atlas I	Geostationary Operational Environmental Satellite-I
May	Pegasus	Total Ozone Mapping Spectrometer/ Earth Probe
July	Pegasus	Seastar (Sea Viewing Wide Field of View Sensor)
July	Delta II	Wind
August	Pegasus	Fast Auroral Snapshot Explorer
September	Atlas E	National Oceanic and Atmospheric Administration-J
November	Delta II	Polar



Hubble Space Telescope First Servicing Mission crew visits Goddard

The crew of STS-61: mission commander Richard O. Covey (Col., USAF), pilot Kenneth D. Bowersox (Cmdr., USN), payload commander Dr. Story Musgrave (M.D.), mission specialists Jeffrey Hoffman, Tom Akers (Lt. Col., USAF), Kathryn C. Thornton (Ph.D), and Claude Nicollier of the European Space Agency, visited Goddard recently to talk about the success of the Hubble Space Telescope (HST) First Servicing Mission. Here, Center Director Dr. John Klineberg (at podium) leads HST managers in a ceremony honoring the crew and the Goddard employees who make up the HST team.

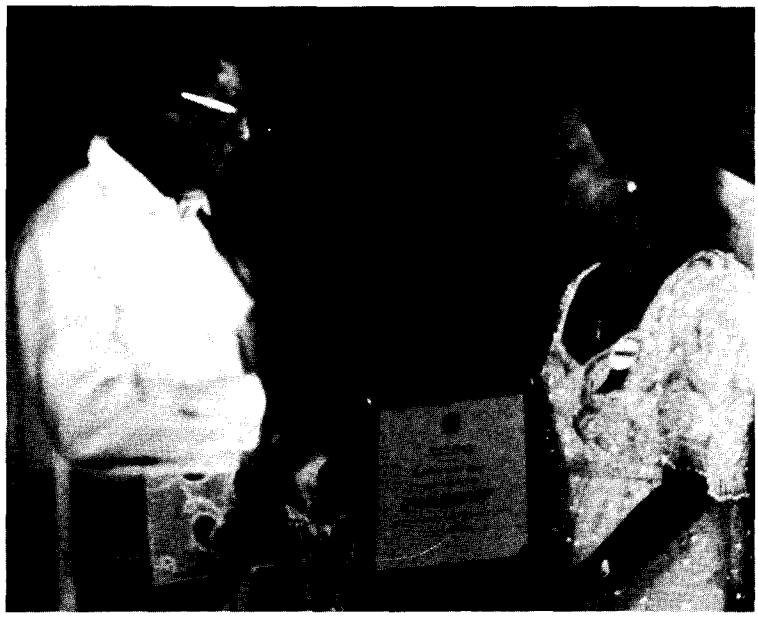
Goddard mission operations manager receives award

Angelita Castro Kelly, Code 505, mission operations manager (MOM) for the Earth Observing System (EOS) Project, recently received a Presidential Award from Philippine President Fidel V. Ramos.

Kelly was chosen from a field of 158 nominees from 21 countries after a year-long selection process.

The award, "Pamana ng Pilipino" loosely translates to the "Pride/Treasure of the Philippines" award. It is given to Filipino natives overseas who have demonstrated outstanding performance in their fields.

Kelly was honored because of her achievements at Goddard, particularly her work (prior to EOS) with the Shuttle/Manned Flight Program. Her performance as mission manager and later, as project manager of the Spacelab Data Processing Facility (SLDPF) in the Mission Operations and Data Systems Directorate/Code 500, earned her a NASA Exceptional Service Medal, a Manned Flight Awareness Launch Honoree award and the coveted "Silver Snoopy" award. In May 1993, she also received the Goddard Exceptional Achievement Award.



Philippine President Fidel V. Ramos presents the Presidential Award plaque to Angelita Castro Kelly, mission operations manager (MOM) for the Earth Observing System (EOS) Project, at Malacanang Palace, Manila, Philippines.

Goddard's 1993 Combined Federal Campaign a success

Once again Goddard employees demonstrated their commitment to the community by helping GSFC succeed in reaching the goal set for the 1993 Combined Federal Campaign (CFC).

Following is a summary that shows how the center did:

Goal: (National Capital Campaign)	$380,000.00
Contributions: National Capital Campaign	$395,875.48
Central Maryland Campaign	$ 14,520.00
Goddard Total	$410,395.48
Participation: National Capital Campaign	1934
Central Maryland Campaign	48
Goddard Total	1982 (Gifts)
Average Contribution:	$207.06

1993 CFC Highlights

CFC Merit Award*:	Directorates; 100, 110 and 400
Average Contribution:	$207.06 ($18 increase from the 1992 CFC)
Eagle Awards**:	11 percent increase from the 1992 CFC

* Merit Award is given when there is an average contribution of $50 per person in a directorate, coupled with a 65 percent participation rate.

** Eagle Award is given when an employee contributes one percent of his/her salary.

Goddard Engineering Colloquia

During March four engineering colloquiums will be held in the Building 3 Auditorium. The sessions begin at 3:30 p.m.

March 7: Dr. Frank Nichols of the North Mississippi Medical Center, presents Health Care: Science, Economics, Ethics and People.

March 14: Ira Flatow of Samanna Productions, presents Fascinating Stories Behind the Great Inventions That Have Changed Our Lives.

March 21: Robert Cringeley of INFOWORLD, presents "Accidental Empires."

March 28: Dr. Lawrence Krauss of the Case Western University Physics Department, presents Desperately Seeking Dark Matter.

Goddard engineering test and integration manager dies

George Russell Springham Jr., Code 754, Environmental Test Engineering and Integration Branch manager died January 6 at age 60. Russ, as he was known to most, was a native of Baltimore, Md., and a graduate of the Baltimore Polytechnic Institute. He received a bachelor of engineering degree in civil engineering from Johns Hopkins University, Baltimore, Md., in 1955.

Springham began his engineering career with U. S. Army Corps of Engineers, serving as a first lieutenant in the 24th Engineers Construction Group in Kaiserslautern, Germany where he conducted feasibility surveys for all NIKE sites in West Germany.

He joined the AAI Corp. in Cockeysville, Md., after leaving the Army in 1957. There he worked as a senior engineer. He was responsible for the structural design of high-speed rocket sleds and stress analysis for hyper-velocity gun experiments.

George R. Springham, Jr.

Springham joined Goddard in April, 1962 as project manager for the Attitude Control Test Facility project, a 2-million dollar controlled magnetic field test facility featuring 40-foot diameter Helmholtz coils and non-ferrous-metal design for simulation of orbital magnetic field environments and nulling of Earth's magnetic field.

This facility has since been designated as a national historic site despite its continuing almost daily use, and the existence of only two or three similar facilities worldwide. Russ also was commended for his management of the design, procurement and construction of the Building 10 Acoustic Noise Test Chamber, which can simulate the exact sound spectrum emitted by virtually any launch vehicle. As Code 754's lead structural engineer, Springham received a Merit Award for restoring the High Capacity Centrifuge in Building 15 to operational status after a 5-year period of inactivity.

In his final year, Springham successfully managed the entire massive environmental test complex during its peak work load, as the various Hubble Space Telescope repair mission items were tested, astronauts trained and a full barge-load of equipment shipped to the Kennedy Space Center, Fla., for the first servicing mission.

Springham's work on the Magnetics Testing Facilities earned him his Maryland registered professional engineer's license and he was a member of the Society of Professional Engineers and the Johns Hopkins Club. Russ is survived by his mother, Helen May Springham; his wife of 38 years, Thomasine "Tommy" Mulvhill Springham; son Russell Thomas Springham; daughter-in-law Kimberly; two grandchildren, Nicholas and Chelsea; and the Goddard community. His guiding presence, expertise and dedication will be missed.

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