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National Aeronautics and Space Administration

GODDARD NEWS

Goddard Space Flight Center February 1976 Vol. 23, No. 10

SPAR PROGRAM AIDS IN SHUTTLE PREPARATIONS

Throughout NASA, preparations are underway for the Space Shuttle. The Shuttle, planned for 1980, will be a manned reusable space vehicle operated as a transportation system for a wide variety of space missions in Earth orbit.

The Shuttle will carry Spacelab, a versatile space laboratory and observatory facility. The Spacelab Program is a cooperative venture between NASA and the European Space Research Organization. It provides for the definition, design, development and production of manned laboratory modules and unmanned, unpressurized instrument platforms suitable for conducting research and applications activities on Space Shuttle missions.

GSFC's sounding rocket team initiated Shuttle data support preparations with their recent launch of a new Canadian Black Brant VC vehicle out of the White Sands, New Mexico, Missile Range.

"The purpose of the SPAR program is to develop space processing techniques and to encourage the participation of the scientific community in readiness for future applications which will take place when the Space Transportation System and the Spacelab become operational," according to Dick Ott, Goddard SPAR project manager.

Goddard Space Flight Center was responsible for the launch vehicle and payload subsystem responsibility, total payload

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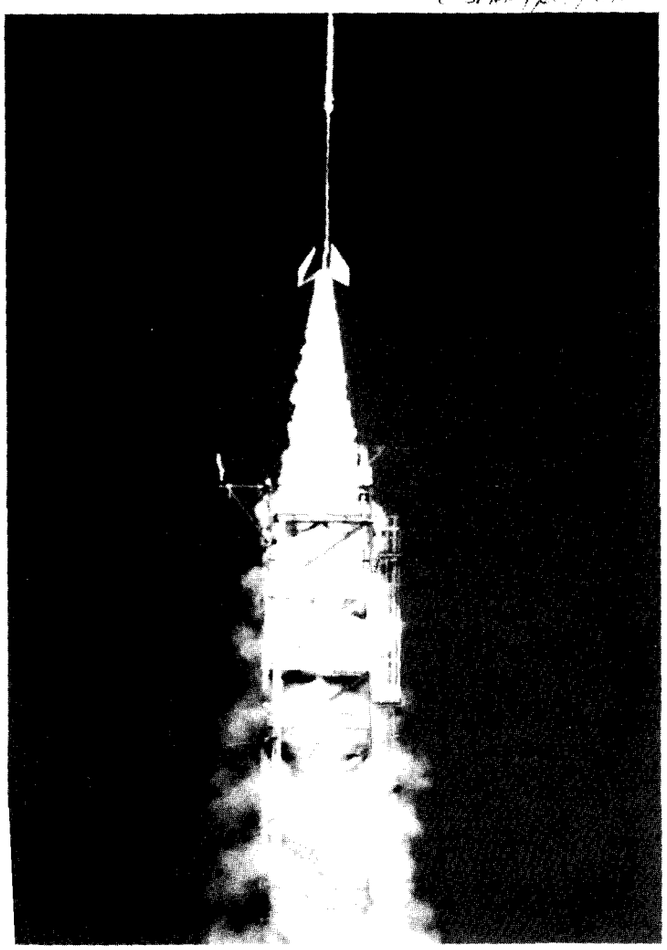
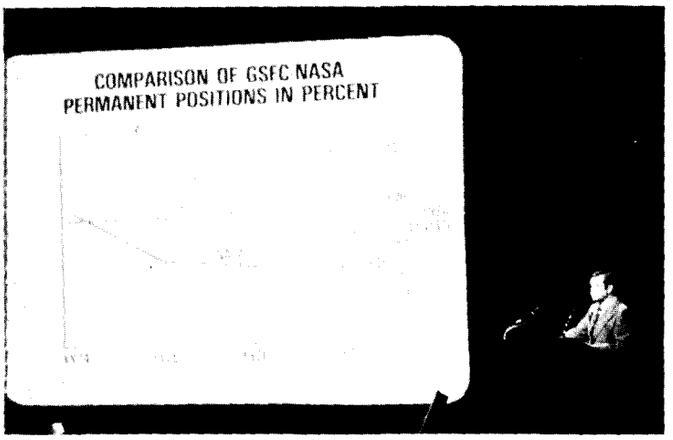


The Black Brant VC was launched from White Sands Missile Range on December 11, 1975.



Goddard's civil service staffing level has been exceptionally stable in recent years.

DR. CLARK LAYS OUT GODDARD'S ROLE IN "THE SCIENTIFIC REVOLUTION"

Dr. John F. Clark, Goddard Director, outlined the role that Goddard will play in the "Scientific Revolution", in his presentation on "The State of the Center." His address was given on January 29 in the Building 8 auditorium and was carried on closed circuit TV to: Building 3, Building 7, Building 26, both cafeterias, and all permanent CCTV receivers throughout Goddard.

The following is exerpted from Dr. Clark's speech:

1976 is a year of triple historical significance. First, we are observing the 200th anniversary of our nation. Second, this year is the 50th anniversary of the flight of Dr. Robert Goddard's liquid fuel rocket. Finally, 1976 marks the 15th anniversary of the dedication of this center.

All three of this year's anniversaries tend to influence the future similarly because of their common theme. That theme is exploration: the deliberate step into the unknown. What each of these events set into motion is still gathering momentum and making history.

It is obvious in this year of commemorating one revolution that we must help to further another: "The Scientific Revolution." As C. P. Snow has pointed out, it provides the only method by which most people can satisfy the basic urges for more years of life, freedom from hunger, and survival for children.

Because the downtrend in fundamental research is continuing, we must increase our efforts to extract maximum results from the resources we have available. Such results have been the hard core of Goddard's accomplishments and will be the foundation for our future achievements.

All of our plans for the future depend upon the very difficult task of building our capabilities in cumulative steps, year by year. NASA's pioneering activities have produced systems so dependable and so valuable that they are weaving their way into the daily business of life . . . as well as into the daily life of business.

In some lines of work people have a choice: they can admit failure or they can redefine success. We cannot. In addition, with our declining budgets, we cannot afford failures. Methods of assuring mission success while reducing costs will become increasingly important.

Naturally what happens in our future will depend upon how well we fare in the budget process every year. There has been a downward trend caused by NASA's funding decline and the eroding effect of inflation. However, Goddard's budget has been at a virtually constant level of effort expressed in FY77 dollars, since 1975.

In prior years Goddard was funded primarily by three sources: The Offices of Tracking and Data, of Space Science, and of Applications. Goddard now also receives major funding from the newly created office of space flight. This alignment emphasizes Goddard's unique diversity.

One reason that I believe Goddard did comparatively well in this year's budget is because out of the four new starts in the agency we have been assigned three. These are the Solar Maximum Mission, the Thematic Mapper, and Magsat.

At a meeting of the Center Directors we were given the following ground rules for implementing the new roles and missions: 1) manpower ceilings are firm, 2) any new starts must be proposed within those ceilings, 3) centers may adjust manpower between programs following consultation with headquarters.

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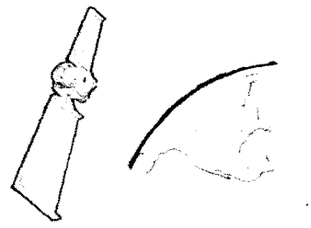


The CTS will make possible television reception and two-way voice communication with the use of small, low-cost ground terminals.

CTS — MOST POWERFUL COMMUNICATIONS SATELLITE

A five-year effort of international communication between NASA and Canada's Department of Communications (DOC), culminated in the successful launch of the world's most powerful communications satellite, the Communication Technology Satellite (CTS), on January 17, from Cape Canaveral, Florida.

The CTS will provide community services such as education, health care, news, cultural events and business information to remote areas of the United States and Canada where population density is not sufficient to support investment in the large ground receiving stations required for existing satellite communications systems.

Communications experiments, which will be carried out by a variety of groups in the United States and Canada, include tele-education, tele-medicine, community interaction, data communications and broadcasting.

CTS will make possible high-quality color television reception and two-way voice communication with the use of small, user-operated ground terminals by means of a high power (200 watts) transmitter.

The 675 kilogram spacecraft was placed into geosynchronous orbit by a Goddard-managed Delta model 2914 launch vehicle. The CTS will be stationed at an altitude of 36,000 kilometers over the equator, just west of South America.

The CTS will operate in a new frequency band allocated for broadcast satellites. The transmitting power levels are 10 to 20 times higher than those of today's commercial communications satellites.

NASA/GODDARD WINS ACCOLADE ON EEO

NASA has been granted two major awards by social action groups in recent months, according to Leon M. Perry, NASA public information officer for minority affairs.

The Black National Medical Association awarded NASA first place as the outstanding scientific exhibitor at its Miami Beach Convention, August 11-15, 1975.

The Committee on Social Justice, a division of the National Association for Public Continuing and Adult Education, presented NASA with an international award for Goddard's development of the ATS-6 satellite which is universally known as "the teacher in the sky." The award was presented at their annual conference, held on November 6, 1975 in Chicago, Illinois.

Perry praised NASA in a speech before an awards ceremony of the Black Women's Political Leadership Caucus at Tulsa, Oklahoma, December 12, 1975. He said, "NASA is experiencing a quiet but continuous turn around."

Leon M. Perry, NASA public information officer for minority affairs commends NASA.

DR. CLARK OUTLINES GODDARD'S GOALS

During the annual awards ceremony held on December 1, Dr. John F. Clark, Goddard Director, spoke about some of the changes Goddard will have to undergo to contend with forces from the outside world. The following is excerpted from Dr. Clark's speech.

"All of those we will honor today are people who have made things happen. When you do that in NASA, you create change. Our very purpose at Goddard can be said to change certain things from the way they were. We have generated changes which have been felt across this nation and around the world We are accustomed to change; it is our way of life.

Now, we who have caused so much change are in a major period of change ourselves . . . generated by forces from the outside world, as well as by forces from within. These forces will require us to change the way we do business, and in some cases to change the business we do.

A prime goal of the Agency is to achieve economies of scale by reducing the number of Centers working on any one type of activity. We must consider inflation, future missions and take advantage of the numerous and impressive space capabilities acquired over the past 18 years . . . largely as a result of NASA's activities and leadership . . . in the aeronautics industry.

In the science program area, Goddard will maintain an across-the-board capability in all areas of astronomy, as well as space physics. One of the major steps forward in science will occur with the planned launch and operation in 1983 of the Space Telescope for which we will provide the integrated instrument package and conduct the flight operations.

In the Applications areas, Goddard will be involved in a larger way than ever before. A follow-on Landsat sapcecraft, carrying a thematic mapper, is planned. We will continue our broad roles in the areas of weather and climate, earth and ocean physics, communications, earth resources, and pollution monitoring.

We will continue our role as managers of the Delta Launch Vehicle and will continue development and procurement responsibility for the larger sounding rocket launch systems.

Our responsibility for Mission and Data Operations of automated earth orbital spacecraft will now include shuttle-launched free flyers, as well.

Our responsibility continues for network planning and implementation support for automated earth orbital spacecraft, for the earth orbital phase of deep space missions, and for shuttle operations . . . including its approach and landing tests, its orbital flight tests, and its subsequent operational missions.

There will be a major requirement for the development of hardware and systems to acquire and process the enormous amounts of data which will be generated by such projects as Landsat and the Solar Maximum Mission.

In the field of space technology, we anticipate sharply expanding activity in experiment hardware and instruments, such as the thematic mapper. Another fruitful area for instrument work will be the extrapolation of sounding rocket type payloads into longer duration shuttle sortie payloads. We expect a continuing high level of activity in instrument development for free flying spacecraft, as well.

Under existing budgeting and inflationary conditions we certainly can't expect personnel increases. And so, we are committed to using the people we have to accomplish the work underway and the interesting projects of the future.

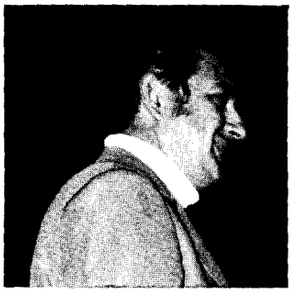
The Center has had 16 years of outstanding performance in a wide variety of space activities. This diversity, itself a strength, enables us to accomplish whatever we set out to do and do it well."

GODDARD RECOGNIZES OUTSTANDING PERFORMANCE

Goddard awards to honor individuals and groups for their contributions to the Nation's space program were held on December 1 in the Building 8 Auditorium. Dr. John F. Clark, Goddard Director, presented the awards.

Dr. John F. Clark

Doris B. Cook



Charles L. Dunfee

Charles A. Glasser

Joseph F. Hennessy

GSFC EXCEPTIONAL PERFORMANCE AWARDS

23 individuals received GSFC Exceptional Performance Awards, Goddard's highest award. They include:

Mario C. Acuna "For the development of a miniaturized wide range triaxial fluygate magnetometer in an incredibly short period of time for launching on Pioneer 11 to Jupiter."

Elizabeth E. Beyer "For significant contributions to the Delta Project in the areas of trajectory, error and guidance analysis, orbital mechanisms and launch window studies."

James P. Brown "For major contributions to the successful demonstration of the Carrier Balloon Systems . . ."

Doris B. Cook "In recognition of unusual creativeness, initiative and diligence in the performance of her assigned duties in support of the work at the Goddard Institute of Space Studies."

John E. Dowling "In recognition of outstanding initiative and leadership in directing the pre-launch and launch support operations of the Spaceflight Tracking and Data Network Station at Merritt Island, Florida."

Charles L. Dunfee "In recognition of outstanding resources management and professionalism while serving as Deputy Project Manager for Resources for the Orbiting Solar Observatory-1 Project . . ."

Frank J. Ferrell "In recognition of outstanding resources management while serving as the Deputy Resources Manager for the Mission and Data Operations Directorate . . ."

J. Patrick Gray "For exceptional technical and leadership performance in planning, implementing, and managing complex, state-of-the-art data management systems in support of near real time data operations for the Global Atmospheric Research Program."

Charles A. Glasser "For leading and participating in the development of large area, multiple-gas, multi-wire proportional counters for X-ray astronomy . . ."

David J. Haykin, Jr., "For exceptional leadership as Mission Operations Manager of the first low altitude Atmosphere Explorer spacecraft, AE-C and AE-D . . ."

Joseph F. Hennessy "For superb technical and leadership skills demonstrated in the design, development, and operation of the complex command management software system . . ."

Edward J. Kirchman "For providing outstanding and sustained technical leadership in Structural Dynamics by innovative and flexible approaches utilizing experimental and analytical techniques . . ."

Jacques D. Knox "For outstanding leadership and demonstrated managerial competence in pioneering the implementation of new concepts for energy conservation at the GSFC."

Chester E. McEachern "For his successful management of the Delta guidance computer development . . ."

Paul L. McKowan "For the design and implementation and operation of a ground data processing system which met the very complex requirements of the ATS-6 mission in a most efficient and timely manner."

Eric E. Metzger "In recognition of his exceptional personal commitment, leadership, and engineering contributions as Deputy Project Manager/Technical for the Orbiting Solar Observatory Nine Mission . . ."

Robert H. Pickard "As Project Manager for the Orbiting Solar Observatory, his managerial expertise stabilized program costs and schedule . . ."

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Elizabeth E. Beyer

John E. Dowling

Frank J. Ferrell

David J. Haykin, Jr.

Edward J. Kirchman

Awards . . . From Page 3

Jacques D. Knox

Robert H. Pickard

Charles E. Trevathan

John C. Voelkel

William M. Hocking

Vincent V. Salomonson "For outstanding leadership as Chairman of the Water Resources Sub-Discipline Panel, Earth Resources Survey, in developing a strong NASA Program . . ."

Charles E. Trevathan "In recognition of his exceptional engineering contributions in the field of standardization of command and data handling systems for orbiting earth satellites."

Carmel E. Velez "For outstanding initiative and technical leadership in the generation of new technology in the field of flight dynamics . . ."

John C. Voelkel "For major contributions in test planning, development, coordination, technical direction of the Spaceflight Tracking and Data Network in support of Atmospheric Explorer programs."

Roger D. Werking "For exceptional performance in the successful management, planning, and execution of spacecraft altitude determination and control operations for a wide variety of spacecraft . . ."

George C. Winston "For innovative and indispensable contributions to the state of the art in precision optical pointing systems . . ."

OTHER AWARDS

Numerous other individuals and groups received a wide-range of awards. They are:

Marvin S. Maxwell received the Moe I. Schneebaum Memorial Award for "leadership and creative engineering resulting in design concepts and development of spacecraft sensors and data handling systems . . ." Public Service Awards were presented to the Music and Drama Club "In recognition of the pleasure and happiness brought into the lives of people of the Community . . .", and the Goddard Men's Chorus "In recognition of their services to the Community through their efforts to entertain . . ."

GSFC Equal Opportunity Awards were presented to: **David G. Lewoc** "In recognition of his efforts in identifying, hiring, and providing training for minority candidates from area schools," and **William M. Hocking** "In recognition of his demonstrated leadership, initiative and dedication while serving as Chairman of the Networks Directorate Affirmative Advisory Group." **Anthony G. Brozena** received a Career Service Award for 40 years of Government service. There were nine recipients of Career Service Awards for 35 years of Government service, and 40 people were honored for 30 years of service.

14 teams received GSFC Group Achievement Awards. Recipients include: the Pioneer 10/11 Cosmic Ray Experiment Team, the OSO-8 Cosmic X-Ray Spectrometer Experiment Team, the Printing and Duplicating Services Section, the OSO-8 Project Team, the Landsat/Nimbus Project Team, the GEOS-3 Attitude Capture Team, the Multi-Satellite Operations Control Center, the Nimbus F Experiments/Instrument Team, the Helios Project Team, the Goddard Earth Model Group, the OSO-8 Flight Optics Analysis Team, the ATS-6 Fuel Savings Team, the ASTP-Buitrago Support Team and the Records Management Group.

Safety Awards for Calendar Year 1974 were awarded to the following groups in "honorary recognition of their exemplary safety record without having a lost time accident to any employee for a period of one calendar year": the Quality Engineering Branch, Quality Assurance Division; the Structural Dynamics Branch; the Thermodynamics Branch; the Functional Test Branch; the Engineering Support Office, Test & Evaluation Division; the Optics Branch, Mission Technology Division; the Machining Branch, the Metal Forming Branch; and the Fabrication Engineering Branch, Engineering Services Division.

Eric E. Metzger

Vincent Salomonson

Carmel E. Velez

Roger D. Werking

Anthony G. Brozena

GODDARD MOURNS . . .

Howard L. Galloway, Jr., staff engineer in the Applications Technology Satellite, Ground Support Section, died Sunday, January 25 in New Delhi, India. He was serving as the NASA/Goddard representative for the Satellite Instructional Television Experiment which utilizes the ATS to instruct Indians in over 5000 remote villages.

In 1970, Howard received a plaque from Goddard awarded "in recognition of exceptional contribution to Aerospace Education during the first decade of space exploration."

As trustee to the National Association of Rocketry, he conducted numerous demonstrations of model rocket flights for schools, scout troops, 4-H groups, and teacher workshops. He was a Boy Scout leader for many years, and received the Halethorpe Community Association Award for an outstanding citizen contributing to the community for his services to young people.

In 1968 and 1971 the National Association of Rocketry awarded him a trophy for outstanding service and in 1970, he received a letter of appreciation from President Nixon for his "outstanding record of service to young people."

Howard was a member of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, and the Sigma Pi Sigma physics honor society. He authored several publications on rocket performance for the Naval Ordnance Laboratory and NASA.

Howard is survived by his wife, Dottie; two daughters, Joyce E. Ocampo and Mumtz V. Sunderji; and his brother, Raymond A. Galloway.

Howard L. Galloway, Jr.

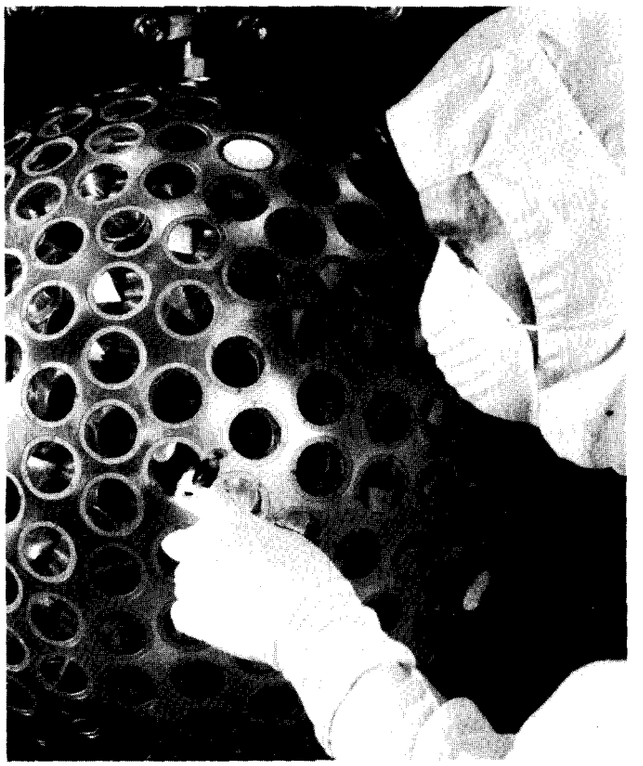
Helen Attick

Helen Attick, a Technology Utilization Assistant, died of cancer on Wednesday, January 14. She had retired on November 25 from her position in the Technology Utilization Office where she coordinated administrative functions in the approvals and publications of new items of technology in Tech Briefs and Special Publications. Helen was also responsible for Goddard's Tech Brief Award Program.

In 1974, Helen received the Outstanding Performance Award for her many contributions toward a smooth and effective program in the Technology Utilization Office. This was only one of several awards she received at Goddard related to her job performance.

Active in community affairs, Helen served for 10 years as a Life Member of the Prince George's Area Science Fair. She also participated in many Goddard social events and enjoyed travelling.

Helen is survived by her daughter, Judy Clarridge of Seattle, Washington, and her brother and sister, Sterling Thrift and Frances Kerr, both of College Park.



Mike Fitzmaurice, a physicist at Goddard, inspects a unique reflector on the Laser Geodynamic Satellite (Lageos). The satellite carries 426 special reflectors to return laser pulses to the earth.

LAGEOS EXPECTED TO PREDICT EARTHQUAKES

Looking something like a cosmic golfball, a geophysics research satellite completed tests at Goddard, and will soon be available to aid scientists in their efforts to predict earthquakes.

The Laser Geodynamic Satellite (Lageos), expected to last several million years, was shipped to the Western Test Range in California on February 1.

Lageos is designed to provide a stable point in the sky from which to bounce laser signals. By recording the speed of the laser beam with an accuracy of about one ten-billionths of a second, Goddard scientists expect to measure the relative location of participating ground stations within a few centimeters (about an inch). The result will be the development of earth crustal motion models with particular interest on those motions which preceed earthquakes.

The satellite carries 426 special reflectors designed to return laser pulses to their exact point of origin on the globe. A prime laser tracking station is located at Goddard Space Flight Center.

Lageos weighs 411 kilograms (906 pounds) and is 60 centimeters (two feet) in diameter.

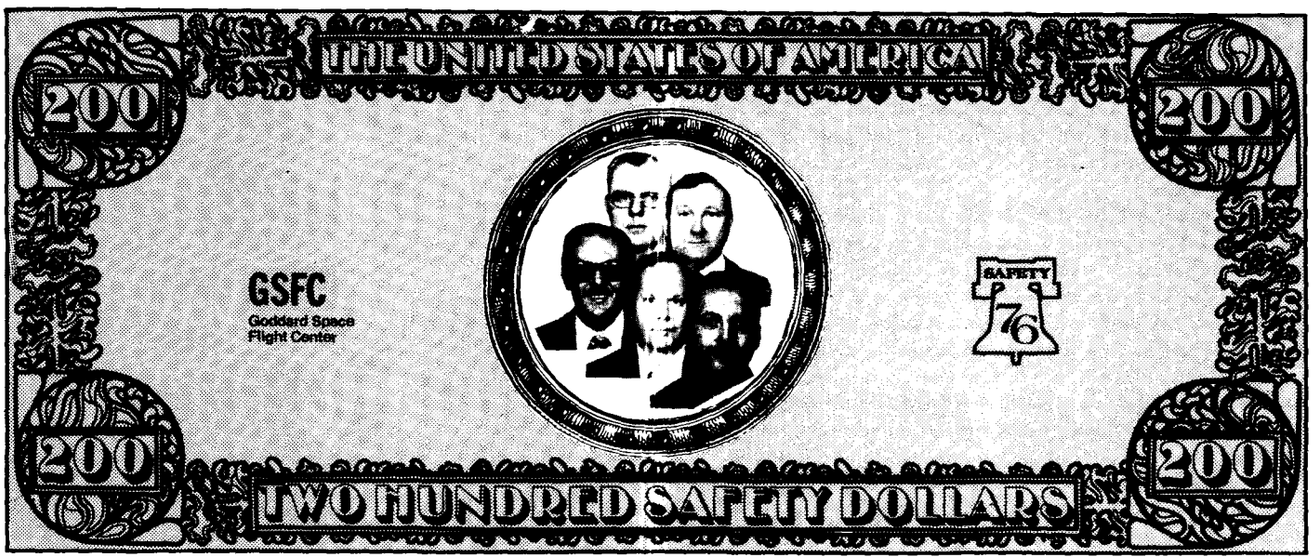
The spacecraft project is being managed for NASA's Office of Applications by Marshall Space Flight Center.

Dr. Clark . . . From Page 1

We have had at this center a remarkable 15 years of productivity. From Goddard came the world's first weather satellites, the first orbitting observatories, the first synchronous satellites, and the first earth resources satellites, to name but a few of our achievements.

We are now entering into an era of new directions for space. This era will make heavy demands upon us. We will adjust to meet those demands. We're going to enter this era as good as new.

I will close by reminding you that what we have to offer the world is becoming more important to our survival with every passing day. Humanity is faced with so many global-scale problems that our skills and talents will be required into the indefinite future in helping to find and apply global scale answers.



Five individuals received $200 "Safety '76" awards for outstanding ideas, contributions, and implementation of safety measures for the January to June 1975 period. They are (clockwise) Anthony J. Retzler, code 320; Robert B. Lively, code 510; Burdett W. DeVaul, code 230; William H. Webster, code 710; and Donald M. Olverson, code 950. Plaques for individual safety achievement went to Robert L. Feinberg, code 560; Robert H. Plaumann, code 840; and Charles D. Mason, code 860.

Spar . . . . From Page 1

integration and testing, and the launch operation. Marshall Space Flight Center handled the science payload.

"Space processing involves the processing of metals, ceramics, glasses, and biological specimens in a near zero gravity environment. The lack of gravity in space results in more homogenous materials and in the case of the biological experiments aids in the classification and analysis of cells," explained Ott.

Experiments were performed during the Apollo, Skylab, and ASTP programs, where organic and inorganic materials were processed in the near weightless environment available during those missions.

The SPAR program consists of 15 rocket launches (three per year) involving the Black Brant VC and the larger Aries (a surplus Minuteman second stage). These rockets provide five to ten minutes of near zero gravity experiment time.

The first launch provided 5½ minutes of near zero gravity time to a 725 pound payload containing nine separate experiments selected through a NASA announcement of opportunity.

The rocket and payload subsystems reached an altitude of 128 miles and a preliminary analysis by the experimenters indicated that useful scientific data was obtained by seven experiments. The other two experiments have not been evaluated yet.

The payload was recovered in excellent condition and several payload and experiment components will be reflown during the next launch which is presently scheduled for early May, 1976. It will contain ten additional experiments.

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NASA's Flight Research Center at Edwards, California has been renamed after Hugh L. Dryden, the aeronautical research pioneer and the first Deputy Administrator of NASA.

FLIGHT RESEARCH CENTER RENAMED

NASA's Flight Research Center at Edwards, California, the prime site for experimental aeronautical flight research, was renamed the Hugh L. Dryden Flight Research Center on January 8, 1976, in memory of the aeronautical research pioneer and the first Deputy Administrator of NASA.

Dr. Dryden's personal contributions to aeronautical research included work in the investigation of high-speed airfoils, supersonic propeller tip velocities, boundary layers, air flow wind turbulence and development of high speed wind tunnels.

On the administrative level, Dr. Dryden was Director of the National Advisory Committee for Aeronautics from 1947 until that agency became NASA in 1958. He was appointed Deputy Administrator of the new agency, a post he held until his death on Dec. 2, 1965.