NASA Aries Suborbital Sounding Rocket Destroyed

by Joyce Milliner

A NASA Aries suborbital sounding rocket, consisting of a military surplus booster and carrying a scientific payload, was destroyed by the range safety officer at the White Sands, NM Missile Range (WSMR) August 24 following what appeared to be a problem in the launch vehicle's guidance system, according to NASA officials.

The order to "destruct" came 50 seconds after liftoff, at 12:40 a.m. Eastern Daylight Time, at an altitude of 77,000 feet. Portions of the destroyed vehicle and associated systems have been recovered and further search is being conducted, officials explained.

The 2,300-pound (1,043-kilogram) payload consisted of an X-ray telescope designed to study distant stellar objects emitting soft X-rays. It was to have reached an altitude of 182 statute miles (292 kilometers) and allow data to be taken for approximately six minutes.

All vehicle and payload hardware were confined safely within the range boundaries, officials said, but no useful scientific data were returned.

The Aries is a NASA/Department of Defense-developed launch vehicle built by Space Vector Corp., Northridge, Calif. Of its 27 flights, the first of which took place at St. Nicholas Island, Calif., in 1973, 11 have been for NASA, and the others for the Air Force and the Department of Defense. Of the 27 launches, there have been three failures. The last failure took place on flight number five in April 1976 from Kiruna, Sweden.

The payload was an experiment developed jointly by Dr. Gordon Garmire of Pennsylvania State University and Dr. R. Novick of Columbia University. Principal investigators were Dr. Garmire and Dr. William Hain-Min Ku, also from Columbia University.

This mission was a part of the overall NASA sounding rocket program, which is managed by the Wallops Flight Facility. The sounding rocket program consists of 40 to 45 missions a year that are launched from various worldwide locations.

An investigation of the aborted Aries mission is underway, officials reported.

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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"Ring Rain" Over Saturn?

by Randee Exler

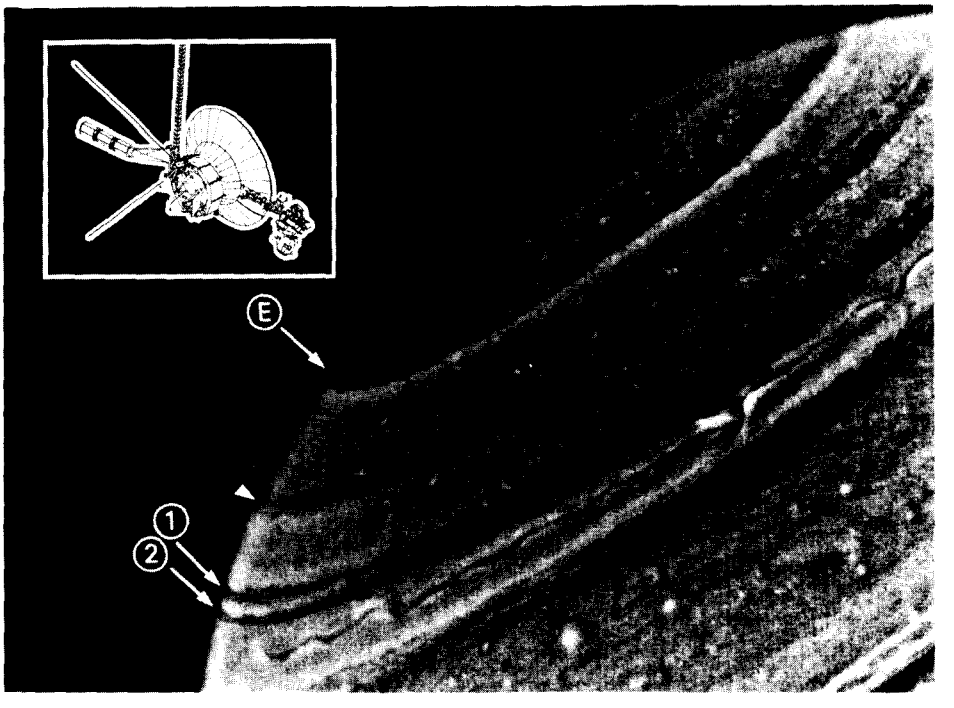
A scientist at the Goddard Space Flight Center hypothesizes that Saturn's rings may be raining. This planetary precipitation, or "ring rain" as Dr. John E. P. Connerney calls it, may be responsible for cleaning up parts of Saturn's atmosphere, affording us a better look at the planet itself.

Connerney found indications that an electromagnetic erosion process is transporting water from Saturn's rings, along magnetic field lines, to the face of the planet.

Voyager 2 Data

His findings are derived from Voyager 2 experiment data as well as ground-based telescopic images. Connerney, of the Planetary Magnetospheres Branch, Laboratory for Extraterrestrial Physics, is a member of the Voyager magnetic fields experiment (MAG) team. In addition to this science experiment, he drew information from other Voyager investigations in-

(Continued on page 2)



HIGH-ALTITUDE HAZE—Voyager 2 (inset) took this high contrast image of Saturn's northern hemisphere. The dark bands (1, 2, and E) mark areas where an electromagnetic erosion process is transporting water from Saturn's rings, along magnetic field lines, down to the face of the planet. These bands match to corresponding locations on Saturn's rings along magnetic field lines. The two parallel dark bands (1 and 2) match to the inner edge of Saturn's B ring. An additional dark band to the north (dart) marks the inner edge of Saturn's A ring; farther northward, a wide dark band (E) is found where magnetic field lines link the Saturn satellite Enceladus and the E ring with the planet's surface. This process may be responsible for stripping the haze from the atmosphere and giving scientists a better look at the planet.

Rounder Earth? Shorter Days? Tilted Axis?

by Randee Exler

CHAO

A study conducted by Goddard geophysicist Dr. Benjamin Fong Chao, Code 621, indicates that earthquakes tend to make the days shorter, the Earth rounder, and the Earth's spin axis tilted. These changes are so small, however, that they are difficult to detect using modern space-age techniques. Nevertheless, they reveal some inner workings of the dynamics of the Earth.

Chao examined the effects of earthquakes on the Earth's rotation rate and gravitational field. He found, among other things, that more earthquakes pull in mass

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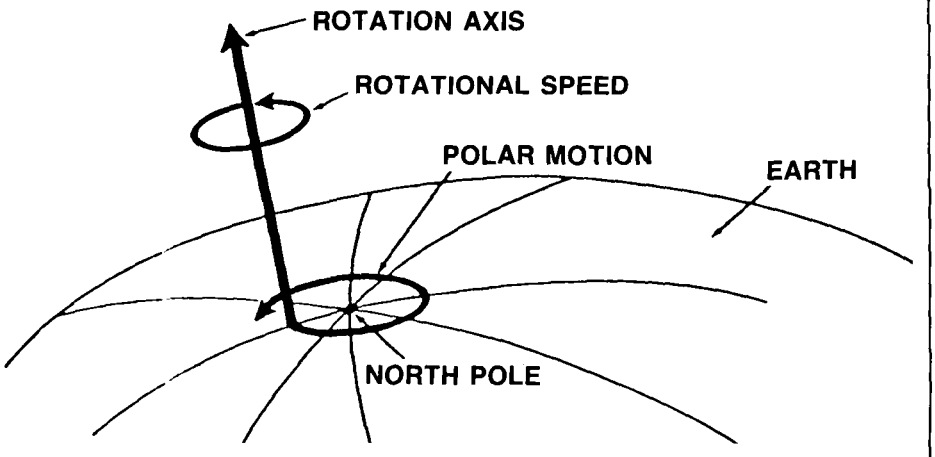


VARIATIONS IN ROTATION—Earthquakes tend to affect the rotational speed of the Earth and the direction in which the rotation axis drifts from the North Pole, according to a recent study completed by Dr. Benjamin Fong Chao, Code 621.

Ring Rain

(Continued from page 1)

CONNERNEY

cluding: the planetary radio astronomy experiment (PRA), the imaging science subsystem (ISS), and the infrared interferometer spectrometer and radiometer (IRIS).

The Voyager 2 spacecraft flew past Saturn on August 25, 1981 and is credited with discovering thousands of ringlets encircling the planet. From Saturn, Voyager 2 flew by Uranus on January 24, 1986, providing our first close look at this planet.

Unique Magnetic Field

Saturn's spin-symmetric magnetic field is the crux of Connerney's theory. This unique magnetic field provides a natural coordinate system with which locations at any point on the planet's surface can be matched to corresponding locations on Saturn's rings.

Although Saturn is a planet covered by a layer of high-altitude haze, pictures of the planet show narrow dark bands where the haze has been depleted. Connerney theorizes that these bands directly correspond with latitudes that are magnetically linked to Saturn's rings.

The rings are believed to be composed, in part, of ice particles. Small meteoroids or other cosmic collisions chip off bits of these frozen water particles from the rings. If the ice bits are small enough, and become electrically charged, they can spiral down the magnetic field lines into Saturn's atmosphere, Connerney believes.

In theory, the water from the rings condenses on haze particles in the upper atmosphere and causes the haze particles to fall out. Large particles will fall out of the upper atmosphere more rapidly than smaller ones. Connerney suggests that when haze particles reach a certain mass, they fall to a lower altitude which, in a sense, cleans the atmosphere, and gives scientists a clearer view of the planet.

SAFETY AWARD—Safety Officer and former Chairman of the Federal Safety and Health Council of Central Maryland Dr. Charles H. Marcus, Code 205.2 (left), personally thanked Dr. Noel Hinners (right) for his cooperation in supporting the Council by presenting him with a Certificate of Appreciation.

Reagan Approves Fourth Space Shuttle for NASA

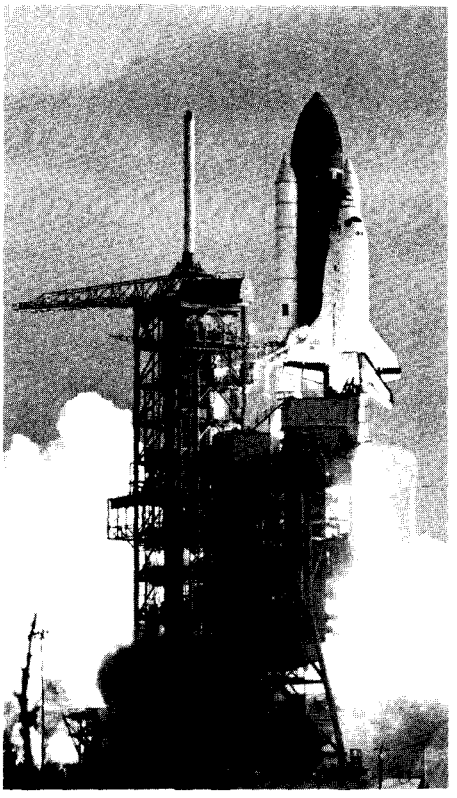
White House Statement

President Ronald Reagan announced on August 15 that America will build a fourth space shuttle. In addition, he called on the private sector to play an important role in the business of launching private satellites. The President said:

"I am announcing today two steps that will ensure America's leadership in space exploration and utilization. First, the United States will, in FY 1987, start building a fourth Space Shuttle to take the place of Challenger which was destroyed on January 28th. This decision will bring our shuttle fleet up to strength and enable the United States to safely and energetically project a manned presence in space.

"Without the fourth orbiter, NASA's capabilities would be severely limited and long-term projects for the development of space would have to be either postponed, or even canceled. A fourth orbiter will enable our shuttles to accomplish the mission for which they were originally intended and permit the United States to move forward with new exciting endeavors like the building of a permanently manned space station.

"My second announcement concerns the fundamental direction of the space program. NASA and our shuttles will continue to lead the way, breaking new ground, pioneering new technology, and pushing back the frontiers. It has been determined,



however, that NASA will no longer be in the business of launching private satellites.

"The private sector, with its ingenuity and cost effectiveness, will be playing an increasingly important role in the American space effort. Free enterprise corporations will become a highly competitive method of launching commercial satellites and doing those things which do not re-

(Continued on page 6)

NASA Response

NASA Administrator Dr. James C. Fletcher announced his pleasure at President Reagan's commitment to building a fourth Space Shuttle orbiter to replace the Challenger and a recommitment to the Space Station. Fletcher said:

"NASA is pleased with the President's decision to replace the Challenger.

"Coupled with his strong recommitment to the Space Station, encouragement of a private launch industry and the prospect of a mixed fleet, this decision demonstrates his determination that the United States maintain world leadership in space. As the President said, 'NASA will keep America on the leading edge of change; the private sector will take over from there.'

"President Reagan's decision accurately reflects the attitude of the majority of Americans. Like the President, Americans understand that our ability to remain the world economic leader in high technology is based in large part on developments in the space program that can be translated by the private sector into new products and processes.

"And the President, like the American people, knows that in this day and age the United States dares not, for political and psychological reasons, let its lead in space slip away. The majority of the world's nations can now continue to look for leadership to the United States in the exploration of the planets and the search for knowledge in stars beyond."

AIAA Hosts "Lunch and Learn" Series at Goddard

The National Capital Section of the American Institute of Aeronautics and Astronautics is hosting quarterly "Lunch and Learn" gatherings at the GSFC Recreation Center. The first program is scheduled for Wednesday, October 8 at 11:30 a.m.

Spotlight speaker and Goddard Director of Flight Projects, Bill Keathley, will talk about the latest Shuttle Manifest and its impact on Goddard payloads. Guest speaker and Senior Space Editor of *Aviation Week and Space Technology* Craig Covault will discuss how NASA is viewed publicly, within the Congress and Administration, and around the world.

Your $6.50 ticket includes lunch and beverage. Reservations are required but tickets can be paid for at the door. For more information or to make a reservation, call 595-4177.

Plan to come and join the excitement— everyone is welcome.

CRAIG COVAULT
Senior Editor
Aviation Week and Space Technology

BILL KEATHLEY
Director
Flight Projects

Summer Students At Goddard— "They're Getting Brighter Every Year"

September means the end of summer and the beginning of another school year. One hundred-six students enriched their vacations by participating in summer programs sponsored by the Educational Programs Unit, Office of Public Affairs. Following is a sampling of Goddard's 1986 summer students:

National Space Club Student Interns

A number of high school students who are considering careers in space science or engineering were provided first-hand experience in a research and development environment. Students got to try out their tentative professional technical career choice. They were assigned to work with a mentor who is doing work related to the general field of interest to the student.

STUDENTS: Dan A. Davis, Rebecca Ann Hoag, David S. Katz, Heather L. Kimmel, Louis Henry Kalikow, Darnell Lynch, Brian Marcey, John Andrew Norfolk, Kevin Victor Pinto, Ben Wan, Grace Yeh

MENTORS: Lee N. Foster, Code 633; Dr. Susan G. Neff, Code 684.1; Dr. James Kalshoven, Code 625; Marc Imhoff, Code 675; Dr. Charles L. Bennett, Code 697; Dr. Walter A. Payne, Code 791; Dr. Harvey Moseley Jr., Code 697; Stewart Meyers, Code 741.1; Richard S. Harner, Code 717.3; Robin Bell, Code 622; Dr. Bruce W. Guenther, Code 673

Internship Newsletter

My name is Kevin Pinto and this year I will be attending Orton Hill High School as a senior. My first day at Goddard was a bit frightening. I was overwhelmed at the size and complexity of the labs and offices where I was to be working. Within the first week I knew I had made the right choice in coming to work here. My mentors taught and helped me like no teacher could in high school. I learned so much in such a small time and I am very grateful for the insight and experience they have given me.

My experience at Goddard consisted of designing and assembling a mock-up of an instrument that is part of the space project known as COBE Cosmic Background Explorer. I worked in the Optical Test Section and my job was to draw plans and use sophisticated lab equipment to assemble and align the instrument with great accuracy. After the work had been completed tests were run to see if the instrument had been put together properly. The tests showed the mock-up as being an extremely good reproduction of the true instrument and my work had proven to be successful.

Research Science Institute Student Interns

The Research Science Institute, formerly the Rickover Science Institute, placed five gifted and talented eleventh graders at Goddard this summer. These students have demonstrated academic excellence in mathematics, the sciences and verbal skills, and they exhibit outstanding potential as future leaders in science. The students worked under the direction of Goddard mentors.

RESEARCH SCIENCE INSTITUTE INTERNS AND MENTORS—FRONT ROW: **Michael David Mitzenmacher, Dr. Adolfo Figueroa-Vinas, Code 692; Sheila Jane Kannappan, Dr. Richard P. Fahey, Code 684.2; Student Intern and Counselor Stephanie Goldstein, Dr. Donald J. Cavalieri, Code 671; SECOND ROW: Shamit Kachru, Dr. Mario H. Acuna, Code 695; Grant Andrew Murray, Dr. Aaron Temkin, Code 680; NOT PICTURED: Jeffery Allen Doering, Dr. John F. Sutton, Code 728**

SHARP Students

The Summer High School Apprenticeship Program (SHARP) was established seven years ago to increase the long-range availability of minority and female candidates for science and engineering positions. This NASA-wide program gives academically-gifted students hands-on experience and is expected to prove invaluable in helping the students decide on a career goal.

SHARP STUDENTS AT WALLOPS: Tyeast Pettit, Ryan Turner, Perdita Savage, Sharon Fletcher, Sandra Spady.

MENTORS: Edward Zenker, Code 521.1; Patrick Hennessy, Code 532.2; Dr. Hasso Niemann, Code 615; Stanley Way, Code 615; Dr. Joseph King, Code 633; Steve Peregoy, Code 633; Robert Patschke, Code 727.2; Lee Nearhoof, Code 743.3; Paul Ondrus, Code 532; James C. Smith, Code 674; Dr. Milton Halem, Code 630; Dr. Chopo Ma, Code 621; George Gerondakis, Code 740.1; Alexander Krimchansky, Code 521.1; Douglas Ross, Code 728.4; Dr. Joseph Grebowsky, Code 614; Carol Arkwright, Code 652; Roy McIntosh, Code 732.2; William Reaves, Code 732.2; John Chitwood, Code 727.2; James Patrick Gary, Code 630.4; Dr. Tom Wilheit, Code 675; Jan Turkiewicz, Code 675; Dr. Mario Acuna, Code 695; Wayne Wright, Code 672; Keith Koehler, Code 130.4; Dr. John Gerlach, Code 822.2; Dr. Steven Long, Code 672.

SHARP STUDENTS—FRONT ROW: Kathleen Williams, Charles Cephas, Kimberly Williams, Gonzalo Graupera, Jennifer Park, Laura Randall, Program Coordinator Cyn Hadnott SECOND ROW: Keith Phillips, George Cordero, Derek Leney, Lucy Bonarek, Randy Grant THIRD ROW: Pamela Rollins, Lee Carter, Ann Smith, Carl Garrett, Paula Southerland FOURTH ROW: Mar-jeau Barrett, Hans Thomas, Bret Ballade, Paul Johnson BACK ROW: Jay Kerr, Ryan Lloyd, Andy Blocker, Belmoor Boyd, Nathanial Dozier

TAG Junior and Senior High School Students

NASA and the Maryland State Department of Education sponsored two-week programs at Goddard for Talented and Gifted (TAG) junior and senior high school students. The program for junior high school students emphasized space science and education. Senior high school students selected and designed a possible research payload for the Space Shuttle's Get Away Special Program. Final proposals were presented to a "Design Review Board" of Goddard mission specialists.

TAG JUNIOR HIGH SCHOOL STUDENTS—FRONT ROW: Nicole Dwiggins, Jennifer Neth, Carrie Korzenewski, Dmitry Nemirovsky, Director Kris Morgan SECOND ROW: Jodie Babitt, Angela Hsieh, Manoj Reddy, Kimberly Mecler, Santiago Pou THIRD ROW: David Carney, Lisa Danbury, Ikuko Sato, Laura Ledsinger, Keisha Rutland, Andrea Wang FOURTH ROW: Mike Colli, Paul Panella, Laura Ahr, Giao Nguyen, Beth Rostan BACK ROW: Hayes Preston-Emmert, Anastasia Telesetsky, Paul Qualey, Jennifer Gowetski, Troy Baisden, Peter Madrinan, Barry Clark, Marty Kelly

TAG SENIOR HIGH SCHOOL STUDENTS—FIRST ROW: Hartley Saunders, Seema Verma, Yungie Hahn, Aileen Huang, Brenda Yoo, Laura Baldwin SECOND ROW: Jeannine Lessmann, Diane Chi, Dan Rothgeb, Tera Paul, Amy Wadell, Director Kris Morgan THIRD ROW: Richard Loeffler, Mike Gilligan, Dan Sterling, Billy Goldberg, Laura Aaron FOURTH ROW: Peter Alspach, Chip Holmes, Shawn Ohler, Karen Bane BACK ROW: Alexander Boone, Richard Wilbur, Paul Duncan, Joe Artioli

Behind the Wheel: 654,500 Miles of Memories

by Carol ne Howze

Who has entered the gates of Goddard more than anyone else? Who drives more than 132 miles each day for the Goddard cause? Who is it that, no matter what the weather, if you're in front of building 8 at the scheduled time, you can catch a ride to Headquarters? Why it's Don Dillon, of course, the man behind the wheel of the shuttle bus.

William Donald Dillon began driving the shuttle bus some 15 years ago as a 30-day trial experience. The 30-day trial grew into a 90-day trial before Dillon decided to man the controls of the shuttle bus permanently.

Dillon, a casually dressed, middle-aged man, often seen sporting small wire-rimmed glasses, has worn many hats over the years, including the beachcomer that he now rarely is seen without.

He came to Goddard and worked with security and later worked as a computer tape dispatcher. After three or four other drivers found that driving the bus and being in traffic all day involved more stress than they could bear, Dillon was called to save the service. For this soft-spoken, easy-going driver, the task was not hard.

"There were only 3 buildings here when I first started," Dillon explained, as he proudly recollected his memories of the Goddard early days. Of course, that time period was more than 654,500 miles of memories ago—enough miles to have gone around the world more times than one wants to count. One of his fondest memories is of the day he brought his infant son Randy to Goddard for his supervisor to see. He never expected, at that time, that one day his son, too, would join the Goddard family. Randy was assigned to Goddard four years ago and works with key lock control in building 1.

Dillon has passengers from various jobs and various places around the country, and he enjoys getting acquainted with them. He says he has an opportunity to meet many of the astronauts and, because they had so many opportunities to talk, he especially enjoyed getting to know John Glenn.

Being on the road much of the day, one is very likely to see quite a few collisions, and Dillon certainly has witnessed his share. "I see at least 2 accidents a day," he said. "Once, in 1982, I counted 26 different accidents in route from Goddard to Headquarters."

He does admit that the day of record-breaking collisions was due largely to hazardous road conditions brought on by a snow and ice storm. However, although he has seen many accidents, he's never had one due to his own negligence. He says, "I've had two because of someone else."

After bearing witness to as many fender benders as Dillon, and tackling the highways and byways of Greenbelt and D.C. all week, most people would prefer to stay off the road as much as possible. But not Dillon. He not only drives to and from work every day, he also prefers to drive on all of his vacations.

A native of West Virginia, Dillon and his wife Nancy live just outside Baltimore. Although Nancy likes the area pretty well, her husband thinks Baltimore is just too crowded and hopes to escape to the quiet beaches of Delaware after his retirement in four years.

During the past 25 years, Dillon has received 15 certificates and letters of appreciation for a job well done. Although retirement is just a ways down the road, Dillon says, "I really never have thought about leaving; I have really enjoyed it."

DILLON—**Drives 132 miles each day for the Goddard cause.**

White House

(Continued from page 3)

quire a manned presence in space. These private firms are essential in clearing away the backlog that has built up during this time when our shuttles are being modified.

"We must always set our sights on tomorrow. NASA and our shuttles can't be committing their scarce resources to things which can be done better and cheaper by the private sector. Instead, NASA and the four shuttles should be dedicated to payloads important to national security and foreign policy, and, even more, on exploration, pioneering, and developing new technologies and uses of space. NASA will keep America on the leading edge of change; the private sector will take over from there. Together, they will ensure that our country has a robust, balanced, and safe space program.

"It has been over 6 months since the tragic loss of the Challenger and her gallant crew. We have done everything humanly possible to discover the organizational and technical causes of the disaster and to correct the situation. The greatest tribute we can pay to those brave pathfinders who gave their lives on the Challenger is to move forward and rededicate ourselves to America's leadership in space."

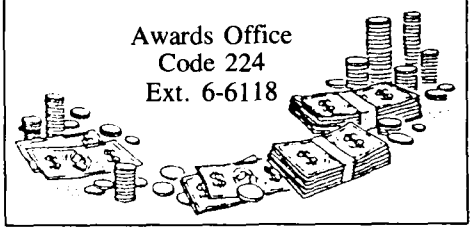
Are You a Daydreamer?

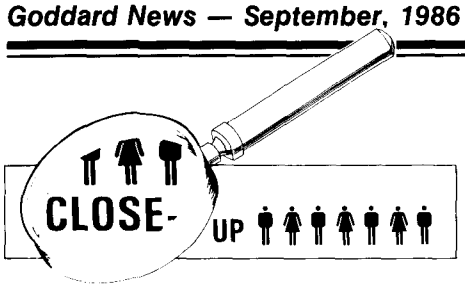
(It Can Pay Off)

If you dream up a good idea that will reduce costs or improve Government Services, send it in.

GSFC Employee Suggestion Program

Awards Office
Code 224
Ext. 6-6118





Congratulations to **Dr. Franklin D. Martin,** NASA Headquarter's newly-appointed Deputy Associate Administrator for Space Station. In that position, Martin will serve as the deputy in the office responsible for developing the Space Station. Martin has served as Goddard's Director of Space and Earth Sciences since 1983 and has been responsible for a broad program of theoretical and experimental scientific research. Martin began his NASA career at Headquarters in 1974 and served there in a variety of positions. He was appointed Deputy Director, Astrophysics Division in 1978 and served as Director from 1979 until February 1983.

Prior to joining NASA, he served as Physicist with the Naval Oceanographic Office and as an aerospace engineer for Lockheed in Houston, Texas, where he was involved in science mission support of Apollos 16 and 17.

MARTIN

STEIN

MARTIN STEIN has been appointed Associate Director for Institutional Management (Code 200). In that capacity, Stein will assist the Director of Management Operations in the planning, coordinating, and directing of all matters concerned with institutional management activities of the Center.

Stein was formerly Chief of the Logistics Management Division (Code 230) from January 1984 until the beginning of his current assignment. Prior to that, he served as Chief of the Program Planning and Resources Management Office (Code 201). He replaces James H. Robinson, Jr., who was reassigned to NASA Headquarters in June 1986.

Goddard's Director of Mission Operations and Data Systems **Peter A. Bracken** has accepted a staff position with the Martin Marietta Corporation's Information and Communications Systems (I&CS) Company in Bethesda. He will serve as Vice President of Technical Operations. Bracken's professional career began in February 1963 as a mathematician with Litton Industries under contract to Goddard's Space Sciences Division. He joined the civil service in August 1964 at Goddard. From 1964 to 1980, Bracken served in a variety of technical and managerial positions in the Sciences and Applications Directorates. Prior to his current position, Bracken served as Chief of the Data Systems Branch, Office of Space and Terrestrial Applications, at NASA Headquarters and as Deputy Director of Mission and Data Operations at GSFC.

As Director of Mission Operations and Data Systems, Bracken has been responsible for managing the Center's activities in space flight tracking, data communications, spacecraft command and control, flight dynamics operations and mission analysis.

In leaving the Center, Bracken wrote: *"I look forward to this new challenge—but after 23 years at Goddard, I will miss it and all the people and exciting accomplishments that have made the Center such a super place to work. I will watch with eagerness and great anticipation as future successes unfold in satellite servicing, the new explorer program, space station, on the TDRS, COBE, GRO, UARS and HST programs, and in so many other exciting areas.*

"Best wishes to all of you!"

BRACKEN

Pete Bracken

Peter Bracken

Retirees

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

	Code	Years
Harris, George H.	510	30
Moore, Durrell	285	28
Sween, John	754.3	30

NACA Reunion

Preliminary planning is going on for the Fourth Reunion of former employees of NACA, the National Advisory Committee for Aeronautics, one of the predecessor organizations of NASA. The reunion will be held in the San Francisco Bay Area on September 30 through October 2, 1988.

When plans become definite, the Organizing Committee will be anxious to reach as many former NACA employees and their spouses as possible. Along with your own name, it would be particularly helpful to review Christmas card lists and address books for other NACA employees. To ensure receiving information on the reunion, when it is available, employees should drop a card or letter with the former NACA employee's current address to:

NACA Reunion Committee
Mail Stop 241-4
Ames Research Center
Moffett Field, CA 94035

Gravity Gradiometer is "Super Cooled"

by Carolynne White

Goddard's Geodynamics Branch (Code 621) is performing studies to assess the capabilities of a new instrument which will provide data about the finer structure of the Earth's gravity field.

The instrument is the Gravity Gradiometer, a cryogenic or "super cooled" device, which Goddard's studies indicate can map the Earth's gravity field to accuracies and resolution levels better by almost one order of magnitude than the information provided by traditional methods of gravity field mapping.

Learning about Earth's gravity field will provide scientists with information about the density structure of the Earth's interior and outer layers, internal processes such as mantle convection, and the formation of geological features such as mountains and basins.

This research has applications for mapping in fine detail the gravitational fields of moons and other planets as well.

The instrument is being developed by a team of University of Maryland scientists, headed by Dr. Ho Jung Paik, of the Department of Physics and Astronomy.

Dr. David Smith, Head, Geodynamics Branch, estimates that the Gravity Gradiometer will be ready for test flights as early as 1990 and for gravity mapping missions in the mid-1990's.

"The gradiometer has been under development since the early part of the century, but never achieved the accuracy dictated by the purpose of mapping the gravity field from space. The cryogenic gradiometer approach being developed by Professor Paik's team is the most promising in the United States," he said. "We are very optimistic."

"SUPER COOLED"—**The Gravity Gradiometer will provide scientists with data about the Earth's gravity field and will be ready for test flights as early as 1990.**

Rounder Earth

(Continued from page 2)

towards the center of the Earth and speed up the Earth's rate of rotation then slow the Earth down. This, in effect, shortens the length of a day.

Prior to Chao's study, it was assumed that the effects of Earthquakes occurred on a random basis—a statistically equal number of earthquakes increased and decreased the rate of rotation.

Chao's study indicates that this is not true. Out of the 2,146 large earthquakes (during 1977-1985) he computed data for, 202 more earthquakes increased the speed of the Earth's rotation and, according to Chao, this is "far from being random." "Earthquakes have a mind of their own as far as their effects on the Earth's geodynamics," he explained.

How does an earthquake make the Earth spin faster? Chao compares this phenomenon to a spinning skater. In order to spin faster, a skater pulls his arms in towards his body. When a net mass is pulled in towards the center of the Earth by an earthquake, like the skater, the Earth will spin faster.

Besides pulling mass in towards the center of the Earth, earthquakes also tend to make the Earth rounder by decreasing the Earth's natural elliptical shape. The Earth's gravitational field becomes more evenly spread.

Chao's work also found that earthquakes tend to "push" the Earth's rotational axis toward the direction of the West Pacific. This tendency is statistically strong.

Chao collaborated with Dr. Richard Gross of the Los Alamos National Laboratory, New Mexico, in this study.

Changes Within The Flight Projects Directorate

The following changes in the Flight Projects Directorate became effective on August 10:

The Solar Optical Telescope (SOT) Project, Code 425, is disestablished. The responsibility for the continuation of the Phase B studies for a reconfigured SOT leading to a High Resolution Solar Observatory has been transferred to the Attached Shuttle Payloads Project, Code 420.

The Explorer Missions Project, Code 410, is established. This Project will be responsible for conducting a series of explorer class science missions utilizing a modified Multimission Modular Spacecraft capable of science payload change-out in orbit. Employees previously assigned to SOT have been reassigned to the Explorer Missions Project. George D. Hogan is appointed as the Project Manager, and Donald Margolies is appointed as the Deputy Project Manager for the Explorer Missions Project, Code 410.

NASA
National Aeronautics and Space Administration
Goddard Space Flight Center

Goddard News

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