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Galileo Will Carry Three Goddard Instruments

by Carolynne White

PRESSURED DESCENT—**This artist's concept shows the Galileo probe, carrying Goddard's Galileo Probe Mass Spectrometer (GPMS) descending into the atmosphere of Jupiter, where it will take measurements for about 45 minutes before imploding under the tremendous pressure—about 20 times that of Earth's atmospheric pressure.**

When the planetary probe Galileo is launched from the Shuttle Atlantis (no earlier than October 12 at this printing) the spacecraft will carry three Goddard instruments to the planet Jupiter, one of which will descend into the planet's atmosphere aboard the Galileo probe.

The Photopolarimeter Radiometer (PPR), proposed by Dr. James Hansen of the Goddard Institute for Space Studies (GISS), will determine the distribution and character of atmospheric particles surrounding the planet. An instrument added after original proposals, the Heavy Ion Composition Instrument/Subsystem (HIC), which is essentially a rebuilt version of the flight spare of a Cosmic Ray Instrument built for Voyager 2, will study the composition of heavy ions in Jupiter's atmosphere.

Perhaps the most dramatic aspect of Goddard's involvement, however, is the Galileo Probe Mass Spectrometer (GPMS), which will descend deep into the planet Jupiter's atmosphere and transmit approximately 45 minutes worth of atmospheric data 133,000 miles overhead to the main Galileo orbiter, and then across the half billion miles to Deep Space Network Stations on Earth, before imploding under the enormous pressure of the Jovian atmosphere.

The Galileo spacecraft will take more than six years to encounter the planet Jupiter, following a series of complex trajectory maneuvers known as V-E-E-G-A (Venus-Earth-Earth-Gravity Assist) in which the spacecraft will loop around the planet Venus and return to Earth. Accelerated by Earth's gravitational forces, Galileo then will swing out past the sun and back past Earth again on its way to Jupiter.

Five months before Galileo encounters Jupiter on December 17, 1995, the 750-pound (340 kg) atmospheric probe carrying Goddard's GPMS and six other instruments will spin away from the main Galileo orbiter at about 40,000 miles per hour (64,000 km) and aim for a spot about six degrees north of Jupiter's equator. Protected by a heat shield which is pyrotechnically ejected after it encounters the atmosphere, the probe will enter Jupiter's atmosphere at about Mach 0.9 (1 equals the speed of sound).

Giant Gas Ball

Mostly hydrogen and helium, the Jovian atmosphere is so dense that scientists can only speculate about its contents at lower depths from data glimpsed through gaps in the cloud cover using remote sensing techniques. Because scientists don't know the lower boundaries of the atmosphere—indeed, Jupiter is a giant gas ball with no actual land surface—the atmosphere cannot be measured in terms of altitude. Scientists measure different depths of the Jovian atmosphere in "bars" of pressure, where one bar is equal to the atmospheric pressure of Earth.

The GPMS will begin measurements at approximately 0.1 bar and continue until the probe is crushed, which is expected to be at a pressure greater than 20 bars. Current measurements using remote sensing techniques have observed Jupiter's atmosphere to be about six or seven bars.

Goddard physicist Dr. Hasso Niemann proposed a mass spectrometer to descend into Jupiter's atmosphere back in 1975; he is the principal investigator for the GPMS instrument.

"What we try to do with this probe," said Niemann, "is to sample *in situ* the atmosphere of Jupiter and go far beyond the

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Talk from the Top

Q: The exterior of the new spacecraft integration building looks, nice, but bare. Would the red NASA "worm" logo on the wall make a good finishing touch? The water tower could also use some decoration—maybe a NASA blue stripe and a red logo? After all, a gray environment attracts gray people.

A: Yes, we do plan to put the NASA Logo on the SSDIF. It has been a part of the construction project and will go on as one of the final finishes to the structure. We'll look also into the water tower situation.

Q: The cafeteria in Building 21 has been pretty crowded lately, and the library says that they're running out of shelf space. Any chance of giving the first floor to the library and building a new, larger cafeteria.

A: The Facilities Engineering Division is looking at a number of options to solve the cafeteria problem in Building 21, including but not limited to, expansion on the existing level, expanded services in an addition to Building 1. . . . A task was recently issued through our on-site support contractor to evaluate food services and expansion options. This would include consideration for a new facility on the east side of Soil Conservation Service Road, congruent with future facilities construction already programmed. It is not in our plans at present to expand library services onto the ground floor. . . . Library shelf space has always been dear, and we are managing within our means by disposing of older materials as new acquisitions arrive. We are also relying more heavily on electronically stored data to reduce net storage requirements.

Center Director John W. Townsend, Jr. wants to hear from you! Send your questions to: TALK FROM THE TOP, Code 130.

Goddard Payload Shares Spotlight With Galileo

by Michael Braukus

After having been conceived 13 years ago, the Goddard-managed Shuttle Solar Backscatter Ultraviolet (SSBUV) instrument was due to be carried into space no earlier than October 12 on STS-34 with Galileo, the Jovian explorer spacecraft. After Galileo is deployed and started on it mission to Jupiter, the Shuttle crew will spend nearly three days taking measurements of atmospheric ozone with the SSBUV.

Global concern over the depletion of the ozone layer has sparked increased emphasis on developing and improving ozone measurement methods and instruments. The SSBUV will help scientists solve problems of ozone data reliability caused by calibration drift of identical global ozone measuring instruments that are on orbiting on a series of National Oceanic and Atmospheric Administration (NOAA) spacecraft.

A similar concern led the instrument's principal investigator, Ernest Hilsenrath, to conceive the idea of SSBUV in 1976, but events prevented the instrument's launch until now.

Hilsenrath said he originally proposed that a Solar Backscatter Ultraviolet (SBUV) instrument fly on Space Lab but the idea was waylaid until 1982. In 1983, NASA Headquarters decided that the engineering model destined to fly on a TIROS satellite should be refurbished and refitted to fly on the Space Shuttle in 1985.

"We were still negotiating for a slot on the manifest when the Challenger accident occurred and that, of course, put us off until after the return to flight," said Hilsenrath.

During the time the Shuttle fleet was grounded, Goddard personnel continued their in-house development and refinement of the instrument and calibration techniques.

"We have done a lot here at Goddard to develop the unique in-house capability to fly an instrument with the high accuracy needed for space calibration," Hilsenrath said. "The team has worked very hard developing the in-flight hardware, an in-house calibration capability and a dedicated data system."

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SSBUV CONTAINED—The SSBUV instrument and its dedicated electronics, power, data and command systems are shown mounted on the Shuttle's payload bay in two Goddard-designed and -built Get Away Special (GAS) canisters. The instrument canister, with its motorized lid, is on the left and the support canister, containing batteries and tape recorders, is on the right.

SSBUV

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With the Shuttle's return to flight, SSBUV was manifested to fly on STS-29. But three weeks before delivering the instrument to Kennedy Space Center, it was bumped from the flight as a result of what Hilsenrath described as a Shuttle performance problem.

Hilsenrath said, "After a lot of negotiations with the program office and shuttle people, we were reassigned to STS-34."

The SSBUV instrument and its dedicated electronics, power, data and command systems are mounted in the Shuttle's payload bay in two Goddard-designed and -built Get Away Special canisters, an instrument canister and a support canister. Together, they weigh approximately 1200 pounds. The instrument canister holds the SSBUV, its specially-designed aspect sensors and in-flight calibration system. A motorized door assembly opens the canister to allow the SSBUV to view the Sun and Earth and closes during the in-flight calibration sequence.

The SSBUV uses the Shuttle's orbital flight path to assess satellite instrument performance by directly comparing data from identical instruments aboard the NOAA TIROS spacecraft, as the Shuttle and the satellite pass over the same Earth location within a one-hour window. These orbital coincidences can occur 17 times a day.

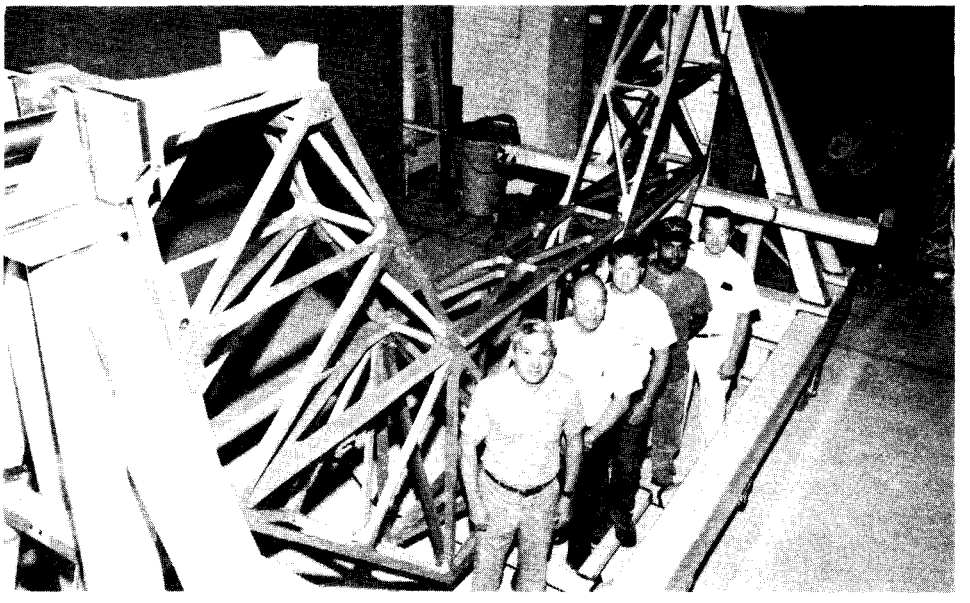
The next flight for SSBUV is on STS-37, which is scheduled to carry the Goddard-managed Gamma Ray Observatory into space as the primary payload on June 4, 1990.

NASA Pipeline

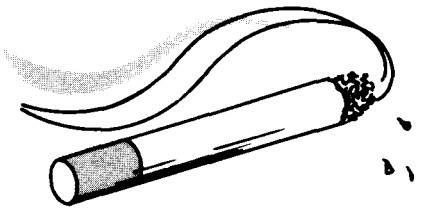
AMES RESEARCH CENTER, Mountain View, CA—Ames Research Center, Genentech, Inc., South San Francisco, Calif., and Penn State's Center for Cell Research, recently announced their long-term collaboration on a major new commercial space research project in life sciences. The project involves a series of ground-based and Space Shuttle experiments to expand previous findings by NASA, Penn State, and other investigators that microgravity accelerates reduction in bone calcium, body mass and immune cell function. The flight program, sponsored by NASA's Office of Commercial Programs and managed by Ames, is expected to begin in 1990 with a Space Shuttle experiment coordinated by Penn State's Center for Cell Research, one of NASA's 16 Centers for the Commercial Development of Space (CCDS).

JET PROPULSION LABORATORY, Pasadena, CA—A complete system for mobile communications has been field-tested for the first time by researchers from the Jet Propulsion Laboratory (JPL). A fully developed system would use satellites to extend mobile telephone services to remote ground users and to users in the air and at sea who cannot be served by cellular telephone systems. Such a system also could serve such users as private drivers, cross-country trucks, forestry personnel and law-enforcement agents. The field tests were made possible by the cooperation of AUSSAT Pty. Ltd., the Australian national satellite system, which provided local facilities used in the experiments. The experiments, conducted in July and August 1989, involved communications between a base at AUSSAT's downtown Sydney, Australia, facility and a mobile unit mounted in a van. The system evaluated in the tests uses vehicle antennas, voice encoders and other hardware developed by JPL under its Mobile Satellite Experiment (MSAT-X) program for NASA.

JOHN C. STENNIS SPACE CENTER, Bay St. Louis, MS—Common indoor plants may provide a valuable weapon in the fight against rising levels of indoor air pollution, based on research conducted at Stennis. NASA and the Associated Landscape Contractors of America (ALCA) recently announced the findings of a two-year study that suggests the common indoor plant may provide a natural way of combating "sick building" syndrome—an acute incidence of indoor air pollution that can occur in closed or poorly ventilated offices and residences. Research into the use of biological processes, as a means of solving environmental problems both on Earth and in space habitats, has been carried out for many years by Dr. Bill Wolverton, a senior research scientist at Stennis.



***IN-HOUSE "SUPPORT"*—The Airborne Support Equipment for the Upper Atmosphere Research Satellite (UARS) was fabricated and assembled entirely in-house by Code 752. The structure, also known as UASE (for UARS Airborne Support Equipment) is a lightweight, across-the-bay structure used to provide all electrical interfaces to the orbiter for the UARS Observatory during launch and while on orbit. In flight configuration, the UASE will have avionics (mounted via honeycomb plating attached to the structure), as well as contingency hardware for extravehicular activity (EVA) such as a tool box, umbilical cable locker, portable foot restraint, and stanchion. Pictured, left to right, are Code 752 personnel: Roger Wood, Jim Munford, Tim Madison, Eric Jenkins, and Wes McDonald. The UARS is manifested for launch aboard the shuttle Atlantis no earlier than November 27, 1991.**



Watch Your Matches and Cigarettes

by John Frey

In the past year, Goddard has experienced a number of fires caused by carelessly discarded cigarettes or matches. The latest of these fires burned a 20′ × 7′ portion of wall insulation in Building 28. The fire resulted in the total building evacuation and loss of computer facilities for six hours. The Health and Safety Branch believes that the fire was caused by a cigarette that was used in an attempt to burn out a wasp nest.

The other fires were the result of carelessly discarded cigarettes in the mulch outside of buildings. These fires smoldered for hours before becoming noticeable. In one instance, an employee used a fire extinguisher on one of these fires and then drove off without reporting the incident. The fire soon started again and had to be extinguished by the Health and Safety Branch.

October is National Fire Prevention Month. The theme for this year's prevention effort is keeping matches and lighters out of the wrong hands. As a result of the recent fires, the Health and Safety Branch wants to remind all employees to dispose of all possible ignition sources in proper ashtrays. Watch your mail for a pamphlet outlining tips for preventing these types of fires.

Any fire, no matter how small, should be reported. To report a fire (or any emergency), dial "112" at Greenbelt, "1333" at Wallops Mainbase, and "2777" at Wallops Island.

Galileo Spacecraft

Continued from page 1

data obtained by remote sensing. From remote sensing, we have some good idea of the chemical composition of Jupiter's atmosphere, but remote sensing instruments cannot see below the cloud cover. We are providing, in a sense, ground-truthing for the remote sensing data, to come up with some definite ideas about Jupiter's atmosphere."

Dr. Richard Hartle (Code 610), a co-investigator on the instrument, said the information returned also has a larger application.

"The GPMS data not only are significant in understanding Jupiter's atmosphere, but also because it will give clues to help us understand the origin and composition of the entire solar system," he said.

Because Jupiter is thought to have a bulk composition similar to that of the primitive solar nebula from which it was formed, a precise determination of the ratio of hydrogen to helium would provide an important factual check of the Big Bang theory of the genesis of the universe.

"Measuring Jupiter's atmosphere now is like measuring it billions of years ago, in its pristine state when it was first formed," he said.

The GPMS will not be turned on until eight days after the Galileo launch, and then only long enough to be checked out. After that the instrument will be turned on about once a year and checked until five months before the encounter in December 1995.

Stan Way (Code 610), an electrical engineer in the Atmospheric Experiment Branch, has been the technical officer for contracts related to the GPMS since its design in 1978. A joint venture, the instrument's electronics were designed by the University of Michigan and built by General Electric in its plant at Valley Forge, PA, then integrated with the sensor, which was designed and built by Goddard personnel, in Building 21.

Physicist Dan Harpold (Code 610), who was responsible for building the sensor, also has been with the GPMS "since it was a design on the blackboard and hopes to stay involved all the way through encounter," he said.

Eleven years worth of work for a scant 45 minutes of data may seem disproportionate to those not familiar with the large time scales common in planetary science, but Way said it's worth it.

"That 45 minutes is crucial to the understanding of the planet and the Galileo mission," he said. "An enormous amount of time and effort was spent for a mere 45 minutes worth of data, but it's worth it for the vast amount of science we'll get."

Said principal investigator Niemann, "Voyager 1 and 2 brought back so much new information on the planet Jupiter that it opened up more room for questions."

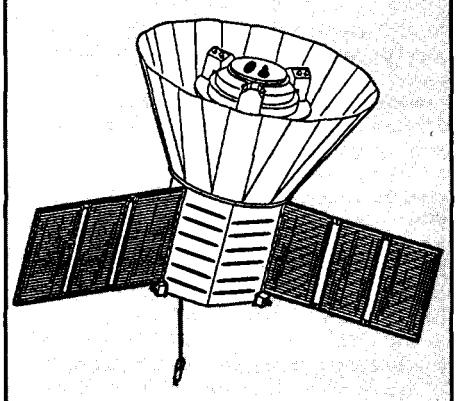
Launch Update: Cobe Shipped

The Cosmic Background Explorer (COBE) was shipped from Goddard's Building 7/10 clean room to the Air Force runway at the Vandenberg Air Force Base out of Andrews Air Force Base at 5:30 a.m. on Wednesday, October 4th.

COBE, scheduled for launch aboard a Delta 186 expendable launch vehicle no earlier than November 9, will study the heat radiation—known as cosmic background radiation—left over from the Big Bang, the cosmic explosion that started the expanding universe. This radiation is electromagnetic energy, the same as light waves and radio waves.

While the data produced by the Cosmic Background Explorer will either disprove or confirm the Big Bang theory of the creation of the universe, most scientists expect that we will learn additional details about the nature of the Bang.

A Goddard-managed in-house project, the COBE spacecraft originally was scheduled to launch aboard the space shuttle. Goddard engineers redesigned and rebuilt the spacecraft after the Challenger disaster to accommodate launch aboard an expendable launch vehicle to avoid scheduling delays.



Goddard Pegsat to Launch From B-52

The Pegasus Satellite (Pegsat), a Goddard-built and tested payload, is scheduled for launch no earlier than mid-November, according to Bob Pincus, Goddard project manager.

The payload, which was designed, built, integrated and tested in just six months, contains a small Navy experimental communications satellite, a NASA chemical release satellite and a set of sensors for taking flight environment measurements during the runway and launch phases of the mission.

The mission is funded by the Defense Advanced Research Projects Agency (DARPA) and NASA, and the launch vehicle is provided by the Orbital Sciences Corporation of Chantilly, VA and the Hercules Aerospace Company of Wilmington, DE.

The payload will be carried aloft under the wing of a NASA B-52 from the Dryden Flight Research Facility. The B-52 is the same plane that was used for carrying the X-15 aloft in the 1960s. The plane will carry the launch vehicle and payload under its right wing. It will take off, climb to 40,000 feet on its way from Edwards AFB to Vandenberg AFB, turn west and fly about 50 miles over the ocean before dropping the payload and igniting the three-stage solid fuel rocket.

The drop will be made approximately one hour after takeoff, Pincus said. The first stage of the launch vehicle fires five seconds after it leaves the mother plane. A second stage fires 12 minutes after leaving the B-52 and places the payload and the third stage of the launch vehicle in orbit.

Approximately 10 minutes into orbit, the Navy satellite will be deployed, Pincus explained, the separation velocity being provided by a spring-loaded device developing a force of 150 pounds.

The barium discharges will be made over Central Canada approximately 60 days after launch, according to Dr. Robert A. Hoffman, the project scientist from Goddard. Each will be fired separately on different days of the mission. The discharges will be visible over large portions of Canada and parts of northern United States, Hoffman explained.

Scientists will track the barium clouds with very sensitive optical equipment located at ground sites in Canada and the United States, Hoffman said.

PHOTO: R. FRISCH

PEGSAT UNDERGOES TESTS—**Bob Pincus (Code 740.2), center, project manager, and Joe Rogers (GE International Service Corp.), mechanical technician (left) and Dave Peters (Code 741.1), mechanical designer, all with the Pegsat project, look over the Goddard-developed payload during recent tests in Building 7. The payload is scheduled to be launched from a NASA B52 over the Pacific Ocean in mid-November. In addition to the Navy experimental communications satellite (top), the 394-pound (178-kilogram) payload contains instrumentation for measuring flight environment data and two chemical discharges which will be made over central Canada.**

Joint NASA/SDIO Program to Study Cryogenic Coolers As Means to Extend Mission Lifetimes

Many of the delicate instruments sent into space must remain at a constant temperature to provide meaningful data; when the instruments' cooling system, or dewar, fails, the instrument fails. For example, the Infrared Astronomical Satellite (IRAS), launched in 1983, was in operation less than a year. The satellite ceased to function when 0.5 cubic meters of liquid helium that it carried boiled out due to inherent heat leaks.

A joint project between NASA and the Strategic Defense Initiative Office (SDIO) initiated on October 2 is providing funding to Cornell University and Mechanical Technology, Incorporated to design and test passive high temperature superconducting (HTSC) bearings to increase the efficiency and reduce the weight and cost of mechanical cryocoolers, making it feasible to replace the stored cryogens in flight mission dewars (like liquid helium or hydrogen) with a longer-lifetime mechanical cryocooler.

If this effort is successful, it could reduce the amount of power needed by the mechanical coolers by about 40%, without reducing their cooling power. This translates into reduced weight for the cooler, making it feasible for spaceflight.

This in turn translates into a potential longer life expectancy for such NASA projects as the Advanced X-Ray Astrophysics Facility? (AXAF), Astromag, and SIRTF.

Yury Flom (Code 313) is the technical officer for the three-year, $772,000 contract with Cornell and MTI. Under the contract, Cornell and MTI will select HTSC material, design a prototype, conduct performance tests, provide preliminary and engineering designs of the engineering model, build the engineering model, and perform a test of the engineering model of the passive HTSC device.

INSIDE

"Mayday, Mayday"

Perestroika at its finest—and perhaps at its earliest!

by Robert J. Bannar

Editor's note: Wayne Hembree graduated from the New Jersey Institute of Technology (NJIT) in 1959. Following are excerpts of a story which appeared recently in his alma mater publication NJIT Magazine:

Yep, though you can't really tell by lookin' at 'm, Wayne Hembree could retire next year. Probably spend more time with his wife, Nancy, counting on frequent visits from his daughters Nancy and Laurie, and surely from his pre-school granddaughter, Erin. . . . Might just spend more time working around the house, or building small carpentry projects in his workshop. Maybe devote more time to his favorite hobby backpacking.

That is, he could if he wanted to. But after a lengthy career of engineering-research projects for the government, he finds his current assignment much too rewarding to walk away from that easily. . . .

Hembree has one of those jobs for which you hope you never need to call on him, but you're glad he's there if you do. Since the beginning of the year, Hembree has been Mission Manager for Search and Rescue whose best known project is SARSAT (search and rescue, satellite-aided tracking) and is part of an overall global search and rescue effort that has since become known as COSPAS/SARSAT.

"Ours is primarily an applications task in which we're applying aerospace technology to support the search and rescue missions," says Hembree, "such as the Coast Guard going out after ships in trouble, and the Air Force and Civil Air patrol going out after crashed airplanes. And we're looking to expand that to other areas, such as people traveling in remote areas."

. . . Without good, accurate information, such as a locating beacon transmitting an easily traceable signal, would-be rescuers might fly over a heavily wooded area forever and never spot the small piece of wreckage among the trees or in the snow. In that case, they try to "guess-timate" where the plane might have been flying hoping for a visual contact. . . .

"I've spent a lot of time looking out of an airplane window," says Hembree reflectively. "I was in the Air Force during the Korean Conflict (1951–55) as a B-29 gunner. And I've gone out with the Civil Air Patrol on visual rescue attempts. . . . It's very difficult."

PHOTO: P. BALTZELL

HEMBREE

Perestroika at its earliest, and perhaps at its finest, is how Hembree sees it. . . .

"When the original idea for the search and rescue satellite was first being kicked around. . . " says Hembree, "it was an all-American thing. . . . '

There is now an intergovernmental agreement to provide these services to the world.

And in what may have been the earliest signs of of perestroika, the Soviets have been eagerly cooperative. Rescuing stranded pilots and seamen, after all, is a universally human concern.

How many lives will be saved? No one really knows, but the latest estimate shows more than 330,000 ELTs [emergency locator transmitters] in existence.

Now that the COSPAS/SARSAT system is fully operational, it has been turned over the National Oceanic and Atmospheric Administration (NOAA). But NASA's input, and Hembree's rewarding mission, are far from over.

"We continue to provide them technical support," he says "We are now in the mode of coming up with the system of the future. . . ."

And there are plenty of projects to keep Hembree's interest percolating. One area is beaconless search and rescue for those crash incidents where either there was no beacon on the plane or it didn't survive the crash. Another is developing devices to eliminate transmitter signal ambiguity, especially with the older but more prevalent ELTs.

"And what about using some of the earth-resources type instruments to look for a crashed airplane," suggests Hembree, "such as synthetic aperture radar, which is a now on airplanes and will be on satellites of the future?"

As an amateur backpacker Hembree sees other potential uses for satellite-directed search and rescue, using recently designed "mini ELTs."

. . . "One of the potentials of the COSPAS/SARSAT system is to support people on foot in remote areas, such as explorers, climbers, backpackers, hunters, and so on."

There is also the potential of supporting disaster communications, such as earthquakes or severe weather problems, helping those people who have to handle the disasters both in a predictive mode (alerting the people) and in after-the-fact search and rescue.

Although his first visit to Goddard was to be a temporary assignment, he's been [here] since 1963.

. . . Since then, he's worked on projects such as Nimbus, the Atmospheric Explorer, and the Hubble Space Telescope.

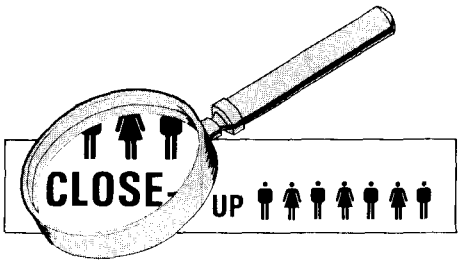
. . . Hembree jumped at the opportunity to become the SARSAT deputy mission manager about five years ago. Then, early this year, Wayne moved up to Mission Manager. "NASA has been very good at providing me with management skills and experience. . . ," says Hembree. ". . . I'm fortunate to be in a position where I am still close enough to the engineering that I can be part of it. I can go out and see some of my ideas come to fruition."

Has Wayne Hembree, a young engineer from Roselle [New Jersey] who hoped to "make it into management someday," found his new mission rewarding? Yes, indeed. But then, who wouldn't?

"I've worked in space all my career. . . when you work on search and rescue, everybody knows what you're doing and why you're doing it. And everybody supports you. That's a good feeling.

"I'm in a position to retire this year if I want to," he continues, "But what I'm doing right now is fun and rewarding and seems to have the potential of really contributing."

Yes, sir, it's plain to see that Hembree likes his job, all right. And don't buy him no rockin' chair for Christmas, 'cause he ain't ready to retire.



Effective July 30, 1989, **DALE F. SCHULZ** (Code 410), of the Explorers and Attached Payloads (EAP) Project was appointed Associate Project Manager for the X-Ray Timing Explorer (XTE). This is essentially a full project manager position for the XTE spacecrraft within the EAP. The modular XTE payload is scheduled to be launched aboard the shuttle Discovery in 1994 and replace the Extreme Ultraviolet Explorer (EUVE) on the Explorer platform. "This is a big challenge for me," said Schulz, "because until now I have only worked with individual instruments. With XTE I must monitor the progress of the whole payload."... The Systems Management Office (Code 502) was reorganized into two Projects: The Customer Data and Operations System (CDOS) and the Earth Observing System Data Information Systems (EosDIS). The reorganization is intended to reduce lifecycle costs for both missions and ground systems of future missions by standardizing the data protocol and systems used for data processing, storage, and communication. The CDOS project is currently in the Phase B definition study of a system to adopt a NASA-wide standard protocol for data systems. "The idea," said **DR. STANLEY SOBIESKI,** Project Manager of the CDOS Project, "is to provide a generic system which can be easily adapted to unique mission needs—to negotiate and build into the system the capability to support changing future mission requirements. Using standard—and modern—technology and protocol not only permits us to use higher speed processing, but also makes the system available to users within a well-defined interface. We don't have to reinvent protocol and standards for each mission; they can be reused."... Effective July 2, **CHARLES A. GLASSER**, formerly of the Instrument Development and Test Section was appointed Head of the Instrument Development Branch (Code 667). This is a new position established as a result of reorganization.

SCHULZ

Goddard Chinese Americans Celebrate Mid-Autumn Moon Festival

The Goddard Chinese American Club celebrated the Mid-Autumn Moon Festival on September 14 with a luncheon and seminar. The events were co-sponsored by the GSFC Equal Opportunity Office (EEO).

A total of 164 people, Asian Americans and friends, enjoyed a six-course Chinese buffet at the luncheon in the Recreation Center. Dillard Menchan, Code 120, Equal Opportunity Programs Manager, and Dr. Robert Price, Code 630.3, Associate Chief of the Space Data and Computing Division for Science Information Systems Center, delivered speeches recognizing the significant contributions made by the Asian community to GSFC. Both stressed the importance of the contractor work force in supporting Goddard's projects. Dr. Erik Mollo-Christensen, Code 670, Chief of Goddard's Laboratory for Oceans, also made short remarks.

Later that day, Dr. S.B. Woo, a physics professor of the University of Delaware and former Lieutenant Governor of that state, delivered a speech on "Asian Americans in the 90's."

PHOTO: R. FRISCH

***MOON FESTIVAL SPEAKER*—Dr. S.B. Woo, professor of physics at the University of Delaware and former Lieutenant Governor of that state, delivered a speech on "Asian Americans in the 90's" at a seminar celebrating the Mid-Autumn Moon Festival. The event was jointly sponsored by the Goddard Chinese American Club and the Equal Opportunity Office (EEO).**

GEWA Picnic Provides Fun for All

PHOTO: M. SMALL

***FISHIN' FOR THE BIG ONE*—The fishing pond was definitely a big hit among the children who attended the GEWA Centerwide Picnic at the Rec Center on August 12, maybe because every child was a winner! (And more than a few goldfish went home in plastic bags!)**

***LONG DAY*—Second only to the fishing pond in popularity were the pony rides, as this tired participant could attest. Also popular for children and adults alike was the moon bounce. More than 400 Goddard civil service and contractor employees and their families attended the picnic to partake of the food, games, prizes and fun.**

PHOTO: M. SMALL

CFC 1990 Campaign Seeks Employee Support

PHOTO: R. FRISCH

1990 COMBINED FEDERAL CAMPAIGN COORDINATORS—**Standing from left to right: Jack Van Zant, Code 600; Chris Alexandre, Code 500; Marg Barton, Code 150; Lois Ryno, administrative officer; Frances Shepherd, center coordinator; Barbara Trott, Code 400 and Bob Sullivan, Code 600. Missing from the photo are: Theresa Wirth, Code 100; Bill Cooper, Code 200; Marietta Sturgell, Code 300 and Clay Magee, Code 700.**

Goddard launched its 1989 Combined Federal Campaign (CFC) into low Earth orbit on October 11th.

The campaign, which ends November 10, has a goal of $283,000, an increase of nine percent over last year's goal. This year's theme is "Help Someone Have a Better Tomorrow."

Frances Shepherd, Center coordinator for the campaign, is concerned about this year's fund raising effort. "Although Goddard reached its goal last year, only 70 percent of our employees participated." she said.

"Goddard employees should be proud to know that every dollar contributed through the CFC will be well spent," said Shepherd. "The administrative cost of the CFC is very small; only four cents of every dollar goes for campaign expenses. The rest goes to the employee's favorite charity or organization."

Charities that participate in CFC provide services to the millions of Americans who suffer the ravages of illness and disease. This year, Goddard employees will have 1,050 local and national charities from which to select as recipients of their CFC donations. This is an increase of more than 200 organizations over last year.

The easiest way to make your tax deductible contribution is through payroll deduction. Whether you donate the minimum deduction of $1 per pay period or $50 a month, a payroll deduction pledge is a convenient way to translate a small amount from each paycheck into a year-round gift to those in need. Donations also can be made as a one-time donation.

Your donations will provide a variety of services. A bi-weekly payroll deduction of $5 can feed a starving refugee child in the Sudan for a year; $12 can care for an abused infant for five days in a comprehensive residential setting; $20 can provide protection to 50 acres of land next to one of our Nation's wild or scenic rivers; and $25 can shelter and counsel a homeless person for two weeks.

Exercise your ability to make life better for someone else today. Give through the CFC.

NASA
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Goddard Space Flight Center

Goddard News

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