

Congratulations TDRS-5 team!!

NASA

National Aeronautics and
Space Administration

Goddard Space Flight Center

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Vol. 38 No. 8 September 1991



The Tracking and Data Relay Satellite (TDRS)-5, is loosened from its restraint device and begins to leave the payload bay of the Earth-orbiting Atlantis. The backbone of NASA's space-to-ground communications, the TDRS have increased NASA's ability to send and receive data to low-earth orbiting spacecraft to more than 85 percent of the time.

TDRS-5 Successfully Deployed

by Jessie Katz

Following a successful ride into orbit aboard Space Shuttle Atlantis, the Tracking and Data Relay Satellite (TDRS)-5 communications satellite, launched on the STS-43 mission August 2, is well on its way to becoming a working member of the Tracking and Data Relay Satellite System (TDRSS). At press time, all of its tests were about one week from completion. TDRS-5 should be on-station and operational in the second week of October.

After it was deployed from Space Shuttle Atlantis about six hours into the mission, technicians at the White Sands Ground

Terminal (WSGT), White Sands, NM, slowly moved TDRS-5 to its current location at 150 degrees west for on-orbit testing. Once TDRS-5 is declared operational, it will take about a week and a half to move TDRS-5 to the TDRS-West position where it will become the fourth satellite in the system.

The TDRSs operate as "bent pipe" repeaters, relaying signals and data between the user spacecraft and the WSGT and vice versa without processing. The satellite communications system began after studies in the 1970s showed that a system of telecom-

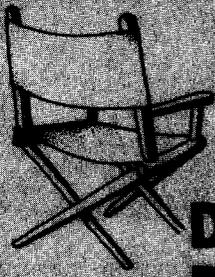
munication satellites whose signals were relayed through a single ground station could better support the space shuttle and low-Earth orbiting satellites than a worldwide network of ground stations.

**Frank
Rondeau:**

**From Out-of-gas
to Out-of-this-world**

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INSIDE



Directors Dialogue

Q. Have any studies been made as to what the cost would be to build and deploy a duplicate of the Hubble Space Telescope? This cost would not include one-time analysis and software development costs for example. The benefits would be increased viewing hours and unimpaired optics.

A. According to Joseph H. Rothenberg, associate director of Flight Projects for Hubble Space Telescope (HST), HST was designed in the 1970s and manufactured in the early 1980s. A spare, and believed to be correctly figured, primary mirror currently exists as does a subset of spacecraft hardware to be used for on-orbit servicing of HST; however, these along with the existing analysis and designs represent only a small portion of the overall HST cost. Duplicating the current 1970s design in a cost-effective way would be virtually impossible. As a minimum, the basic spacecraft subsystems would require redesign and requalification because most of the subcomponents are no longer manufactured. New primary structures for the optical telescope and support modules would have to be built, a new set of instruments would have to be developed, new flight and ground software would be required and a complete ground test program would have to be carried out. We would end up trying to duplicate HST with almost a new spacecraft; therefore, in reality, not even be able to take significant advantage of the existing design, analyses or test and operations procedures. The current servicing with planned corrective optics for HST, on-orbit replacement of failed or degraded components and orbital installation of advanced instruments is believed to be the most cost-effective way of maximizing the HST observing effectiveness.

Dr. Dale W. Harris,
Deputy Director
Flight Projects Directorate
Code 400



ALMOST LIKE BEING IN SPACE -- Goddard's Dr. Ruthan Lewis, Code 408, performs an underwater mockup solar array exchange in the neutral buoyancy pool at Marshall Space Flight Center as a safety diver watches. Lewis is detaching one end of the mockup in preparation for an exchange with a new array.

GSFC Extravehicular Activity Engineers "Wash Up" for Satellite Servicing

"... EV2 configure PRF at TSB, receive solar array from RMS, engage restraint strap ... EV1 translate from AFR to TSB to assist EV2" Sounds like a mission checklist — it is, but with one catch, this mission is all wet! The GSFC Satellite Servicing Project, Code 408, Extravehicular Activity (EVA) team is already rehearsing possible action, alternatives for the Hubble Space Telescope (HST) servicing and Explorer Platform (EP) exchange missions. In fact, the team (Ben Swann, Kirk Rhee, Ken Olson, Mark Jaster, and Dr. Ruthan Lewis, all Code 408), engaged recently in underwater HST and EP neutral buoyancy tests at Marshall Space Flight Center (MSFC) in Huntsville, AL.

Generally, underwater exercises help refine the design of proposed hardware for a mission and address potential hardware for a mission and address potential problems and solutions to crewmember interaction with shuttle payloads. In addition, the scenarios help coordinate the actions of the EVA crew with Intravehicular Activity (IVA) crew and Remote Manipulator System operations.

The comments and actions of the GSFC crew gives equipment designers and mis-

sion planners a heads-up to what the astronauts may expect during training.

Lewis, aspiring to become an astronaut/mission specialist, calls the experience informative, helpful, and most of all thrilling. "I have been in the suit many times, but each time, I find out something new — how the suit reacts to me, how I react to it, and how to make my movements more efficient to conduct the task more efficiently. I'm ready to try the real thing!"

The preparation for these tests is intensive as Kirk Rhee can attest. He organized and coordinated the HST testing with MSFC and readied the hardware for its submission. One of the greatest challenges is "weighing out" all hardware to be manipulated by the EVA crew, especially the large massive elements (such as solar arrays and grapple fixtures.)

The team's work has recently encompassed GSFC missions including the Upper Atmosphere Research Satellite and the Gamma Ray Observatory. Future underwater tests include further development of HST and EP scanerious and tools, where the activities between IVA, EVA, and robotic devices will be choreographed.

Launch Update: XTE and FUSE

Two Goddard-developed spacecraft, the X-ray Timing Explorer (XTE) and the Far Ultraviolet Spectroscopic Explorer (FUSE) are currently scheduled to be launched on expendable launch vehicles instead of on space shuttles. Goddard officials are working towards a 1996 launch for XTE and a 2000 launch for FUSE.

Originally, upon completion of the Extreme Ultraviolet Explorer (EUVE) mission, the EUVE payload was to be removed from the spacecraft platform on which it is mounted, and the XTE payload was to be installed in its place. Then, upon completion of the XTE mission, XTE was to be replaced by FUSE. EUVE is scheduled to launch on a Delta II rocket, no earlier than December 1991, according to NASA's August 1991 mixed-fleet manifest (an abbreviated version appears on page 4.)

In late July, a decision was made by the Associate Administrator for Space Science and Applications Dr. Lennard A. Fisk to develop the XTE and FUSE for launch on expendable launch vehicles in order to maximize the scientific return of the explorer program.

Goddard Sponsors TQM Conference

Goddard is co-sponsoring a Total Quality Management (TQM) conference, entitled "Building a Total Quality Community," November 7, at the Turf Valley Country Club, Ellicott City, MD, with the Goddard contractor community and the Maryland Center for Quality and Productivity. The conference will feature top executives from state and local government, private industry and academia and will focus on critical issues such as Applying Total Quality Management in Education; Community Partnerships--Improving Local Quality of Life; and High Technology Applications for Community Improvement.

Additional seating has been made available for Goddard employees. Directories will publish guidelines, about submitting interested employees names.

Understanding UARS

Goddard's Upper Atmosphere Research Satellite (UARS), is scheduled to launch from Space Shuttle Discovery on the STS-48 mission this month. UARS is the first major atmospheric science observatory in NASA's Mission to Planet Earth Program.

Goddard manages the UARS project for NASA. Dr. Skip Reber is the project scientist. Charles Trevathan is the project manager. In addition, Goddard houses the Central Data and Handling Facility (CD&HF). The CD&HF is an unusual computer system linking the principal investigators to each other. This new system will allow all of the scientists involved to receive data from all of the instruments at their home institutions.

The UARS carries nine complementary scientific instruments which will work together to measure the upper atmosphere's chemistry, winds and energy inputs. A tenth instrument will study solar energy output. Following is a list of the UARS scientific instruments:

Chemistry Studies

Cryogenic Limb Array Etalon Spectrometer (CLAES)
Improved Stratospheric and Mesospheric Sounder (ISAMS)
Microwave Limb Sounder (MLS)
Halogen Occultation Experiment (HALOE)

Dynamics

High Resolution Doppler Imager (HRDI)
Wind Imaging Interferometer (WIND-II)

Energy Inputs

Solar Ultraviolet Spectral irradiance Monitor (SUSIM)
Solar Stellar Irradiance Comparison Experiment (SOLSTICE)
Particle Environment Monitor (PEM)

Solar Constant

Active Cavity Radiometer Irradiance Monitor (ACRIM II)



Visitor Center Events for October

The Goddard Space Flight Center Visitor Center has returned to its fall through spring hours and is open to the public Wednesday through Sunday from 10:00 a.m. to 4:00 p.m., and closed most federal holidays. For more information call x6-8981.

Launch Site Goddard -- Sunday, October 6, 1:00 p.m. and October 20, 3:00 p.m. The principles of physics, chemistry and aerodynamics seem like boring old school subjects -- until you see them in action. Launching model rockets is one of the best ways to actually see some of the basic concepts of the physical sciences, and its fun too.

Know and Tell -- Sunday, October 27, 1:00 p.m. -- "Tracking A 4,000-Mile Vol-

canic Cloud" -- Join Dr. Arlin Krueger, Senior Research Scientist of Goddard's Laboratory for Atmospheres, as he discusses the data obtained from Goddard's Total Ozone Mapping Spectrometer (TOMS), an instrument aboard the Goddard-managed NIMBUS-7 satellite which observed the 4,000-mile-long cloud of sulfur dioxide that has spread from the major eruption of Mount Pinatubo volcano in the Philippines, since the June 16, 1991, eruption.

Weekday Walk Up Tours -- Have family or friends coming into town? Show them Goddard behind the gates. Public tours are offered Wednesday through Saturday at 11:30 a.m. and 2:30 p.m. All tours begin at the information desk in the Goddard Visitor Center. Call x6-8981 for more information or reservations.

September '91 - Mixed Fleet Manifest

Space Shuttle

LOOKING AHEAD

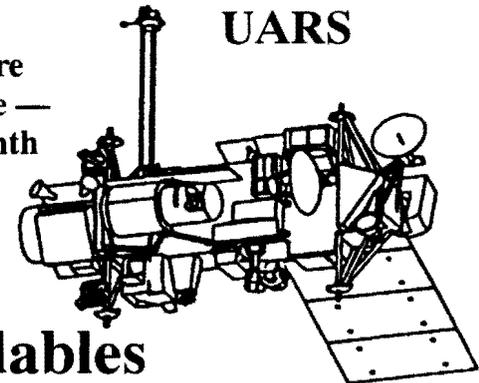
Flight	Date/ Orbiter	Primary Payloads
48	9/91 Discovery	UARS*
44	12/91 Atlantis	DSP

42	2/92 Discovery	IML-01 / IMAX-05
45	5/92 Atlantis	ATLAS-01 / SSBUV-A-01*
49	5/92 Endeavour	INTELSAT-VI-R / ASEM
50	6/92 Columbia	USML-01
46	9/92 Atlantis	TSS-01 / EURECA-1L / IMAX-06
47	9/92 Endeavour	SL-J
52	11/92 Columbia	LAGEOS II* / USMP-01
53	12/92 Discovery	DOD

54	1/93 Endeavour	TDRS-06* / DXS
55	3/93 Columbia	SL-D
51	4/93 Discovery	ACTS
56	5/93 Endeavour	ATLAS-02 / SPTN-201-01* / SSBUV-A-02*
57	7/93 Atlantis	EURECA-1R / SPACEHAB-01 / SHOOT
58	7/93 Columbia	SLS-02
59	8/93 Discovery	FLT OPPTY
60	10/93 Endeavour	SRL-01
61	12/93 Atlantis	WSF-01 / SPACEHAB-02

Flight	Date/ Orbiter	Primary Payloads
62	1/94 Columbia	USMP-02 / SPTN-204* / FTS-DTF-01*
63	2/94 Discovery	HST REV-02*
64	4/94 Endeavour	CRISTA-SPAS / ATLANTAS-03 / SSBUV-A-03*
65	5/94 Atlantis	LITE 1 / SPAS-III
66	4/94 Columbia	IML-02
67	6/94 Discovery	SPACEHAB-03
68	8/94 Atlantis	FLT OPPTY
69	9/94 Columbia	ASTRO-02*

Goddard's
Upper Atmosphere
Research Satellite —
launches this month



Expendables

Date	Launch Vehicle	Payload
Yr Mo	Type	
91 12	DELTA II	BUVE*
91 12	ATLAS E	NOAA-I*
92 06	SCOUT	SAMPEX*
92 07	DELTA II	GEOTAIL*
92 09	TITAN III	MARS OBSERVER
92 12	ATLAS I	GOES-I*
92 12	DELTA II	WIND*
93 06	DELTA II	POLAR*
93 08	ATLAS I	GOES-J*
93 09	PEGASUS	TOMS-01*
93 12	ATLAS E	NOAA-J*
93 12	TBD**	EQUATOR-S**
94 05	DELTA II**	LAGEOS III**
94 07	PEGASUS**	SAC-B/HETE**
94 07	TITAN II	NOAA-K*
94 09	PEGASUS	FAST*
94 12	DELTA II	RADARSAT

* Goddard Mission

** For NASA Planning Purposes

Acronyms

ACTS - Advanced Communications Technology Satellite	GEOTAIL - NASA-Japan cooperative mission to explore Geotail of the Earth Plasma Physics	SHOOT - Super Fluid Helium On Orbit Transfer Demonstration
ASEM - Assembly of Station by Extravehicular Activity Methods	GOES - Geostationary Operational Environmental Satellite	SL-D2 - Spacelab D2
ASTRO-2 - Ultraviolet Astronomy Mission-2	HETE - High Energy Transient Experiment	SL-J - Spacelab J
ATLAS - Atmospheric Laboratory for Applications and Science	HST REV - Hubble Space Telescope Revisit	SLS - Space Life Sciences Laboratory
ATLAS I/II - Commercial and DOD intermediate class expendable launch vehicles	IML - International Microgravity Laboratory	SPAS - Shuttle Pallet Satellite
ATLAS-E - DOD medium class expendable launch vehicle	INTELSAT-VI-R - INTELSAT-VI-Reboost	SPAS-III - Shuttle Pallet Satellite III
CRISTA-SPAS - Cryogenic Infrared Spectrometer Telescope for Atmosphere	ISTP - International Solar Terrestrial Physics Program	SPTN - Shuttle Pointed Autonomous Research Tool for Astronomy
DELTA - Medium class expendable launch vehicle	LAGEOS - Laser Geodynamics Satellite	SRL - Space Radar Laboratory
DOD - Department of Defense	LITE - Lidar In-Space Technology Experiment	SSBUV - Shuttle Solar Backscatter Ultraviolet Instrument
DSP - Defense Support Program	MARS OBSERVER - Spacecraft to study the surface, climate, gravitational, and magnetic fields of Mars	TDRS - Tracking and Data Relay Sattelites
DXS - Diffuse X-ray Spectrometer	NOAA - National Oceanic and Atmospheric Administration	TITAN II - DOD medium class expendable launch vehicle
EQUATOR-S - German cooperative, part of ISTP program, will study the Near Earth Plasma Sheet in the equatorial region	POLAR - Polar Auroral Plasma Physics spacecraft	TITAN III - Commercial intermediate class expendable launch vehicle
EURECA - European Retrievable Carrier	RADARSAT - Radar Satellite	TOMS - Total Ozone Mapping Spectrometer
EUVE - Extreme Ultraviolet Explorer	SAC-B - Satellite de Aplicaciones Cientificas-B	TSS - Tethered Satellite System
FAST - Fast Auroral Snapshot Explorer	SAMPEX - Solar, Anomalous, and Magnetospheric Particle Explorer	UARS - Upper Atmosphere Research Satellite
FLT OPPTY - Flight Opportunity		USML - United States Microgravity Laboratory
FTS-DTF - Flight Telerobotic Servicer Demonstration Test Flight		USMP - United States Microgravity Payload
		WIND - Satellite to measure solar wind input to magnetosphere
		WSF - Wake Shield Facility

America's Top Teachers Take a Lesson from Goddard's Experts

by Valerie A. Liszewski

Teachers from across the nation gathered at Goddard recently to expand their knowledge on the space program and to stimulate ideas for creative learning experiences. With the help of the people at GSFC, the teachers went home with numerous new materials, ideas for space-oriented curricula and team projects, and a greater enthusiasm to encourage students to pursue science and math related disciplines.

The teachers came to participate in NASA's Educational Workshop for Mathematics, Science and Technology Teachers (NEWMAST) program. NEWMAST is co-sponsored with the National Teachers Association (NSTA) in cooperation with the National Council of Teachers of Mathematics and The International Technology Education Association.

Elva Bailey, Code 130, educational programs officer, said the goal of NEWMAST

is, "to bring new information to the attention of students and teachers, and to give the teachers the opportunity to participate in research and development experiments at Goddard." Bailey said he wanted NEWMAST to "show how NASA attacks problems and conducts projects; that science research and development is conducted through teamwork, not individuals at NASA."

This year marks NEWMAST's ninth summer program. Four NASA centers participated in the program this year: GSFC, the Jet Propulsion Laboratory, Pasadena, CA; Kennedy Space Center, FL; and Marshall Space Flight Center, Huntsville, AL. This year teachers were chosen from a pool of 785 teachers. "These teachers represent the cream of the crop, the live wires," said Paula Batzer, a science teacher on loan to Goddard from Piccowaxen Middle School in Charles County, MD.

One of the highlights of NEWMAST was the simulation of a Get Away Special (GAS) experiment. The GAS project involves flying small, self-contained experiments on the space shuttle. Assistant Project Manager for Operations in the Cosmic Background Explorer (COBE) John Wolfgang oversaw the organization of the project. The NEWMASTers proposed five possible GAS experiments and voted on which one to pursue. In the spirit of NASA, the group came up with an appropriate name and acronym for the project: GEM - Gold Electroplating in Microgravity.

Five teams worked on different aspects of the project such as data acquisition, thermal engineering and fabrication engineering. Guiding the teams were Goddard's experts in these areas: Thomas Yi, and Doris Jallice, Code 711; Carol Mosier, Code 732; George Gerondakis, Code 752; and

(Continued on page 8)

INSIDE**Frank Rondeau: From Out-of-gas to Out-of-this-world**

by John J. Loughlin, II

Frank A. Rondeau, Code 752.1, an aerospace engineering technician, knows the difference between skill and luck. He's become an expert on the subject because he seems to have a lot of both.

While skillfully operating a Brother Electronic Discharge Machine, (EDM) used to make tungsten grid-work for use in the High Energy Imaging Device instrument, that will fly on a Goddard high-altitude balloon, Rondeau describes some of the incredible luck to come his way over the years.

Airline Career...Grounded

The year was 1973. Rondeau, an Air Force Vietnam veteran, thought that his future lay in the field of aircraft mechanics. Using his G.I. Bill educational benefits, he earned an airframe and power-plant license. That's when the first bit of good luck, disguised as bad luck, came his way. It was bad luck because the airlines, which had always seemed to be a stable long-term employer, went through the process of deregulation. Jobs became very scarce. It was good luck because it helped land Rondeau at Goddard.

"Because I couldn't find work fixing airplanes, I worked at everything from a chef to a chauffeur," Rondeau said. "Finally, I figured as a mechanic, I could always make a living fixing something."

That's when the 39-year-old former Rhode Islander packed up his tools in his car and hit the open road.

Out of Gas

"My plan was to just keep driving until I either ran out of gas, or got a job," he said. At the time Rondeau's fuel-starved car sputtered and finally conked out he was also out of money. Rondeau guided the car, on its final roll, into a gas station near Goddard on Southway Road.

"I was very lucky," Rondeau said. "The gas station gave me a job as an auto mechanic right away." Rondeau's skill as an aircraft mechanic paid off. He found he was capable of repairing automobiles.

The now gray-bearded Rondeau, paused from his work on the EDM as if to add emphasis to the part of his tale that was about to follow. "One day, some guy with a



Photo: J. Semeraro

CUTTING A NEW PATH – Frank A. Rondeau, Code 752.1, aerospace engineering technician, cuts a custom tungsten grid-work for use in the High Energy Imaging Device instrument to be flown on a Goddard high-altitude balloon. The Electronic Discharge Machine he is using has never been used before for this process and Rondeau is literally writing the book on this ground-breaking technique.

Goddard sticker on his car, breaks down at the corner," Rondeau said, "and while I am working on his car, he asks me if I would be interested in filling out an SF 171 to go to work across the street at Goddard." Rondeau filled out the form, mailed it to the address the stranger had supplied and about two weeks later, he was interviewed and offered a position in the Goddard Apprenticeship Program.

Rondeau went to work in the fabrication shop as a GS-02 by day and continued on at the gas station by night in order to support himself. "I took one whale of a pay cut," said Rondeau, still with a trace of a New England accent, "but for the opportunity of a lifetime, it was well worth it."

Out of This World

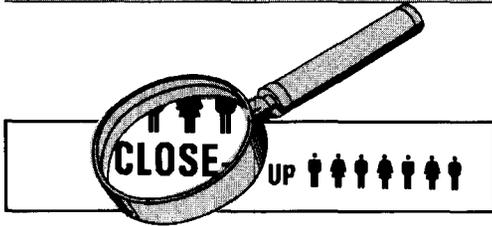
That was seven years ago. Today, Rondeau is a GS-10, technician working

on the most high-tech equipment in the world. Pointing with pride to the EDM machine, Rondeau says, "You don't see anything like this as an auto mechanic."

The project he is working on, the cutting of a specialized tungsten grid, has never been done before. "We are writing the book on this, no one has ever done this kind of specialized work before," he said.

The grid will be used as a kind of lens to help solar scientists see some of the processes taking place on the Sun. The instrument it will be part of will become airborne beneath one of Goddard's massive scientific balloons.

While Rondeau to this day doesn't know the identity of the stranger with the faulty car who changed his life seven years ago, he'll always be grateful. "If I had it to do all over again, I would in a minute," he concluded.



Congratulations to the following employees on their recent appointments: **KENNETH FROST**, Deputy Director of Space Sciences, Code 600...**JAMES A. GAMBARDELLA**, U.S. Small Business Administration Procurement Center Representative, Code 263 . . . **DR. ANTONIO J. BUSALACCHI JR.**, Chief of



GAMBARDELLA

the Laboratory for Hydrospheric Processes, Code 970 . . . **HOWARD HERZIG**, Assistant Head of the Optics Branch, Code 717 . . . **WAYNE POWELL**, Head of the Telemetry Systems Section, Code 822.3. Con-

gratulations to the Manned Flight Awareness Honorees who went to Kennedy Space Center (KSC), FL, to observe the launch of STS-43. While the honorees did not see the launch -- the flight was delayed because of a technical problem with the shuttle -- the honorees did attend an astronaut/honoree reception and a VIP tour of KSC. The Goddard honorees were: **GEORGE M. BARBEHENN**, Lockheed

Technical Operations, Co., Inc. (LTOC); **MARY BOLOORI**, EER Systems; **DAVID D. BOON**, Computer Sciences Corp. (CSC); **MELVIN C. CLARK SR.**, Code 513; **ROBERT H. CORNETT**, ST



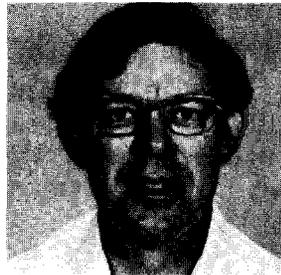
BUSALACCHI

Systems, Corp. (STX); **HERBERT A. CUNNINGHAM**; Bendix Field Engineering Corp. (BFEC); **GREGORY V. FRAZIER**, Code 731.1; **RICHARD R. GRAVEL**, BFEC; **MALIEH HAKIMI**, CSC; **HOWARD L. HAYES III**, BFEC; **ROBERT C. HOWATT**, Code 532.1; **John Hsieh**, LTOC; **KENNETH F. KITTELBERGER**, Booz-Allen and Hamilton, Inc.; **KAREN A. MCDONALD**, Code 284.4; **BRIAN L. PATTI**, BFEC; **LESTER H. WENTZ JR.**, Code 510.1; **LOUIS C. YAKSTIS**, CSC; **SHARON A. ZEHNER**, CSC.

Photos: M. Small

IN MEMORIAM

James "Jim" G. Marsh 1939 - 1991



Jim Marsh, Code 926, a member of the Laboratory for Terrestrial Physics and a Goddard employee since 1964, died at home on June 30. According to Locke Stuart, Code 920, assistant chief of the Laboratory for Terrestrial Physics, Marsh was a prominent NASA contributor in the field of satellite geodesy (the study of the size and shape of a satellite and the exact positions of points on its surface) and was

instrumental in developing a space geodesy capability at Goddard. Marsh had more than 100 publications to his name.

His accomplishments included investigations of the applications of satellite observations for measuring the size, shape and gravitational and tidal field of the Earth and developing models for improved orbit determination. These investigations produced both the NASA standard and internationally recognized state-of-the-art gravitational models used for geophysical and orbit determination purposes.

News from the Goddard Contractor's Association

by Richard J. Backe

An article appeared in the July 1991 issue of the Goddard News about the new Goddard Contractor's Association (GCA). The GCA's chairperson, Richard J. Backe, Unisys Corp., Lanham, MD, will be presenting articles in the Goddard News from time to time. The purpose of the GCA is to permit NASA management to more readily exchange ideas and work more efficiently on programs of common interest with the contractors on Center.

The Goddard Contractor's Association (GCA), working together with Goddard officials, is looking for additional ways to work with the external community in sharing resources and good ideas. This is part of Goddard's commitment to Total Quality Management (TQM). One of our first initiatives has been to set up a committee to define the common educational goals of Goddard contractors and to see how we can involve the local community.

At least part of the impetus for this came from a visit by U.S. Senator Barbara Mikulski. The Senator has a background in education and is interested in NASA's efforts with community colleges.

Goddard has a substantial contractor work force of technicians supporting the professional staff who need special skills typically obtained on-the-job or via special courses at Goddard.

The GCA education committee, co-chaired by Tom Amacher of NSI Technology Services, Corp., is identifying a number of core skills that could be developed into a Goddard-based program. The local schools system could assist in administering such a program with several advantages such as the courses would be made available to potential employees in the local community outside Goddard who might otherwise not consider or become qualified for a career in space or that incumbent Goddard technicians may have available a greater diversity of career enhancing education programs.

The committee is investigating a variety of alternatives to enhance Goddard's relationship with the local community.

CENTER Lines

THERE GOES DE-1 -- The Dynamics Explorer (DE)-1, a spacecraft designed to study the interchange of energy, electric currents and mass between the upper atmosphere, ionosphere and magnetosphere was retired on March 15. But a part of the project still lived on. That was the part of the project that dealt with gathering data from the spacecraft and processing it for users. While no new data was gathered after DE-1 was retired, data previously collected by the Information Processing Division was still being processed. This support is due to end September 30. The DE-1 Sigma-9 computer facility, the last Goddard support left of the DE-1 project, will close at that time. This computer facility was initially installed in 1973 to support the three Atmosphere Explorer satellites and has been operating continuously for 18 years as the central processing and analysis system for the two programs. Prior to the shut down, the DE-1 project will be holding a close-down ceremony on September 27 for about 100 people who have worked on the project.

"CHECKED OUT" THE LIBRARY LATELY? -- Goddard's Homer E. Newell Library located in Building 21 celebrated its 30th birthday in May. By stopping in today, enterprising employees will find a wealth of information and services including scientific and technical books and journals, computer indexes and abstracts, even entire articles on compact disk. There is even a new electronic database called "Current Contents" that allows the reader to browse the table of contents of scientific books and journals. Searches on "Current Contents" can be done by journal or by topic. Library tours are held the third Wednesday of every month at 10:30 a.m. for new employees or employees who want to find out about how the library works. Members of the Goddard Community can browse through the library's collection of books and journals without leaving the office by using ARIN, the library's on-line catalog. Employees interested in remote access to the ARIN catalog must register for a password. For more information about the library and its many services call x6-7218.

America's Top Teachers

(Continued from page 5)

Walter Sullivan, Code 702. The teachers reported working late hours in order to prepare their preliminary design for review and discussion.

"There is incredible satisfaction in developing an idea and delivering it to a mock-up....Everyone in the group benefitted from this project," expressed Francis A. Collins, a science and technology teacher from Neshaminy Junior High School in Langhorne, PA.

Other highlights of the program included panning for gold, a satellite video conference with astronaut Jay Apt, certification of teachers for the loan of lunar samples and a model aircraft and rocket demonstration.

Annamae J. Hein, a science teacher from Allentown, PA, said, "Being at NASA and seeing the scientists at work has been an exciting experience. There are many talented people working here. It makes me proud to teach in America."

GIVE

On August 7, 1991, the Bloodmobile was held in the Building 8 auditorium and 183 prospective donors volunteered to donate blood. The following is a list of Goddard employees who were cited by the American Red cross with gallon pins at the Bloodmobile.

# of Gallons	Name	Code
30	Morton Friedman	480
16	John Adolphsen	311
10	Ken Kittelberger	
3	Scott Glubke	713
2	Pat Brasure	974
2	Harry Crispell	523
2	Christopher Greenwell	300
2	William Tereniak	750
1	Thomas Buchanan	598
1	April Hildebrand	114
1	Allison Lopez	930

The next Bloodmobile is scheduled for October 2, 1991, in the Building 8 auditorium. Watch Dateline Goddard for details.



Goddard News

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