

International Cometary Explorer (ICE) Fine Tunes Course for Comet

By Charles Recknagel

As Goddard's International Cometary Explorer (ICE) continues to move closer to its September 11 intercept of Comet Giacobini-Zinner, controllers this month completed the first and largest of four final orbital trims that will direct the satellite precisely through the comet's tail.

The course corrections, conducted from ICE Mission Control at

Goddard June 5, utilized two thousand pulses of the satellite's two pound hydrazine thrusters to change the spacecraft's heading so that it will fly through the comet's tail 10,000 km (16,200 miles) from the cometary nucleus.

The burns began at 8 a.m. EDT and lasted four and-a-half hours. Had the burns not been made as planned, ICE

would have missed the Comet Giacobini-Zinner by more than 200,000 km (124,000 miles).

The satellite/comet encounter, the first in history, will provide scientists with their first look at the make-up and dynamics of a comet's tail. ICE was launched in 1978 as the International Sun-Earth Explorer and re-directed toward Comet Giacobini-Zinner in

Continued on page two

NASA

National Aeronautics and
Space Administration

Goddard Space Flight Center

Goddard News

Greenbelt, Maryland and Wallops Island, Virginia

Vol. 31 No. 6-June 1985

Liberty Restoration Uses GSFC Paint

By Carter Dove

Symbols need touching up from time to time, too.

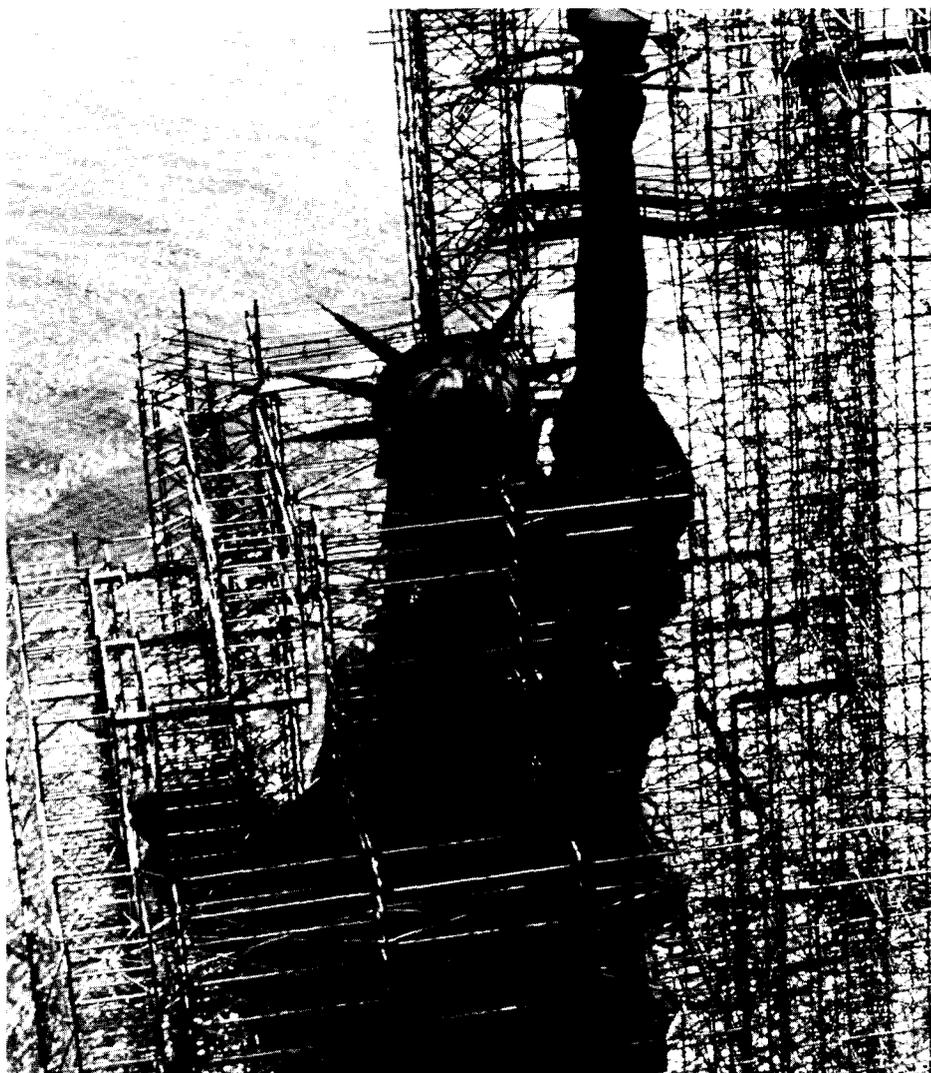
However, little did Dr. John Schutt, Code 623, know that the primer coating he had developed someday would be used in a major "facelift" of the world's foremost symbol of freedom, the Statue of Liberty.

Crews now are performing extensive renovation and refurbishment on the statue—including use of the Schutt-masterminded, NASA-patented IC-Zinc 531 (formerly K-Zinc 531) primer coating on the interior—in preparation for rededication July 4, 1985, a commemoration of her 100th anniversary in October 1986.

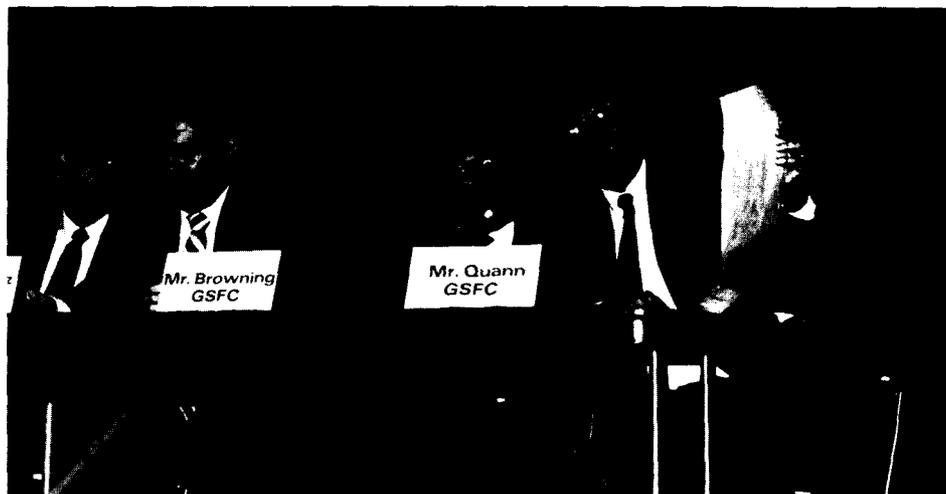
Rather than statue restoration, the prime motivation in the Goddard physical scientist's research was to find a way to protect gantries and other structures at NASA's primary launch site, Kennedy Space Center, FL, where salt corrosion and hot rocket exhaust had become a destructive duo.

He began his research during the summer of 1968 in the basement of his Silver Spring, MD home. He knew all too well about the many organic

Continued on page eight



REHABILITATING A NATIONAL TREASURE—The Statue of Liberty, built in 1886, is being painted inside with protective coating developed by Goddard's Dr. John Schutt.



SIGNING FOR SPACE STATION—Left to right: Giles Sinkewiz, General Manager for GE Spacecraft Operations, Space Systems Division, Philadelphia; Ronald Browning, Deputy Director of Flight Projects for Space Station; and John Quann, Goddard Deputy Director, participate in Space Station contract award ceremony.

Space Station Contract Awards to GE, RCA

NASA's Goddard Space Flight Center in Greenbelt, MD awarded two \$10 million contracts to RCA and General Electric for definition and preliminary design of the Space Station in a ceremony at Goddard April 25.

Goddard Deputy Director John Quann represented the Space Center in the contract signing ceremony. Charles A. Schmitt, Vice President and General Manager of RCA Astro Electronics Division, Princeton, N.J., represented RCA. Giles C. Sinkewiz, General Manager of GE Spacecraft Operations for General Electric Space Systems Division, Philadelphia, represented GE.

Goddard awarded each company with a fixed price 21-month contract for

\$10 million to engage in parallel but independent efforts to study and design elements of the Space Station and associated free-flying platforms.

Both companies will cover the analyses, definition, and development of the platforms, customer servicing equipment and accommodations for attached payloads. Platform elements will utilize derivations of Space Station subsystems and or modules. Customer servicing includes subsystems capable of supporting the berthing, maintenance, resupply, assembly, checkout, repair, upgrade, and instrument exchange on free-flyers, platforms, and payloads. The companies also will address laboratory outfitting for scientific/life science needs.

Goddard will evaluate each company's proposals after 21 months to choose a final design for the Space Station system elements.

ICE Adjustment

Continued from page one

1982. The satellite and comet are now closing at a relative velocity of 21 km (13 statute miles) per second.

Three smaller orbit maneuvers will be performed as ICE approaches the comet. The last trim currently is scheduled for three days prior to encounter. Such course corrections are necessitated by slight alterations in the comet's orbital path as material spontaneously outgasses from the comet's core, acting as jet thrusters upon the comet's body.

Coverage includes Arecibo

The latest adjustment in ICE's trajectory relative to the comet will place the satellite/comet encounter within the coverage window of the world's largest single dish radio astronomy telescope, located in Arecibo, Puerto Rico. The 300 meter dish, being used for the first time to communicate with a spacecraft for the ICE mission, will supplement coverage by NASA Deep Space Network Stations at Goldstone, CA., Madrid, Spain, and Canberra, Australia, and the recently completed 64 meter antenna of the Japanese Space Agency at Usuda, Japan.

Emerges from behind Sun

ICE's current course adjustment is based upon recent visual observations of Comet Giacobini-Zinner as the comet emerged from behind the Sun in April. The April observations are the first since July 1984. Currently, the

comet is approximately 1.6 AU (Astronomical Units), or 240 million km (149 million miles) from the Sun, or roughly the distance of Mars, on the inbound leg of its orbit between the Sun and the neighborhood of Jupiter.

Comet Giacobini-Zinner was discovered in 1900 and returns to Earth's neighborhood every six and-a-half years. It will not be visible to the naked eye but should be an easy target for small telescopes used by amateur astronomers.

Welcome to Summer Party - June 20

Say goodbye to the winter blahs and hello to other Center personnel at an after hours summertime, funtime fling sponsored by the Goddard Employees Welfare Association on Thursday, June 20 from 5:00 p.m. to 10:00 p.m. at the Rec Center.

For only \$2.00 per person, this centerwide party will feature a wide variety of food, as well as dancing. Feast on hors d'oeuvres, drumettes, baked ham, cheeses, relishes, salads and snacks and dance to the sounds of a disc jockey. Beer, wine and setups will be provided. BYOB if you want something else.

Tickets are on sale at the GEWA store.

Goddard Gets New All Digital ROLM Telephone Data System

By David Thomas

Today's office equipment is evolving at a rapid pace, and what is installed in the office today may show up in your home tomorrow.

In the beginning, in Goddard offices, there were just telephones. Then telemail and modems were added in order to send and receive data over the telephone lines. Soon the data needs began to overwhelm the old telephone system. So, a Source Evaluation Board (SEB) was appointed to define and procure a new system to handle the expanding voice/data communications needs.

Operational in 1986

After a lengthy, SEB-sensitive process, the Center has chosen ROLM Corp., McLean, VA to install and maintain new telecommunications systems at its Greenbelt, MD and Wallops Island, VA sites. The new, all-digital ROLM CBX II 9000 system is scheduled to become operational in March 1986, installation will begin in June. The Rolm system will replace the Chesapeake and Potomac (C&P) analog Centrex system used since 1979.

With the new service, 10,000 and 1,800 line system will provide

Goddard's Greenbelt and Wallops sites, with both voice and full data capability and terminals at each desk. All data terminals and essentially all telephones can be in operation simultaneously without saturating the new system.

The system will be especially appealing to those who want their information faster. It has the capacity to transmit data at 56,000 bits per second (bps), while the old system is limited to 2400 bps. And it has other advantages, too, according to the technical officer monitoring the contract.

Variety of new features

"Not only will we be able to receive and transmit data faster," said Bill Hahn, code 543, "there'll be other data features like transferring files from one computer to another, electronic mail, compatibility with different systems and a comprehensive recording system that will document all calls."

"We'll also have voice features like 'call forwarding, speed dialing and call waiting,' available to all users without a separate charge for each feature, as we have now with the current Centrex system."

Equally important is the expected savings from the switchover. C&P's services and its phones were leased until last year, when the Center began buying the phones. The lease cost approximately \$147,000 a month.

"This system will be leased for five years and then Goddard will own it," Hahn said. "At that time we estimate we'll be saving about \$150,000 a month."

Customer training provided

Hahn said customer training will be provided. Additional features can be acquired. The total price for the new system will be \$15 million over the estimated six-year contract.

Hahn said the SEB, chaired by Bob Kraemer, code 700, worked diligently to get the best deal at the best price for the new phone system. The SEB was supported by a technical team chaired by Don Wilson, code 540, and a business team led by Mike Kelly, code 247.

"Because of its members' hard work," Hahn said, "we'll be able to meet the demands of our expanding communications requirements for years to come."

Dr. Geller to Head Lab. for Atmospheres

Dr. Marvin A. Geller was appointed to the position of Chief, Laboratory for Atmospheres, Space and Earth Sciences Directorate effective April 14.

Dr. Geller joined the Goddard Space Flight Center (GSFC) in 1980 as a Space Scientist in the Atmospheric Chemistry and Dynamics Branch, Laboratory for Atmospheres. As such, he established and directed a stratospheric research group whose mission was to investigate the general circulation of the stratosphere, including chemical processes.

The Stratospheric Research group, which is acknowledged as one of the leading stratospheric research groups in the world, is responsible for modeling and analyzing the radiative-dynamical-chemical structure of the stratosphere.



CHOOSING A PHONE SYSTEM—The Selection Committee for Goddard's new telephone data system includes: (top row, left to right) Lyle Tiffany, Joe Bredekamp, Bill Dickinson, Don Wilson and John Speargas (middle row) Bill Landymore, Jack Paul, Mike Kelly, Bob Kraemer, Bill Hahn (bottom row) Tom Brust, Celeste Delton, Mary Ellen Shoe, Oscar Osvatics and Frank Moore.

IUE Suggests Gas Cloud Around Possible Protoplanetary System

By Charles Recknagel

Do other planetary systems exist beyond our solar system?

The case for a 'yes' answer has received a boost from a recent observation by Goddard's International Ultraviolet Explorer (IUE) satellite revealing what appears to be a variable cloud of gas surrounding the star Beta Pictoris. The star, in the constellation Pictor in the southern hemisphere, is thought by many astronomers to be a leading contender for another planetary system.

Observations made last year

The observations, by Dr. Yoji Kondo, IUE Project Scientist, and Dr. F. C. Bruhweiler of Catholic University in November last year, are the first evidence that Beta Pictoris may be surrounded by gas as well as large dust particles and dust as previously reported from observations using the Infrared Astronomy Satellite (IRAS) and ground based telescopes.

According to Kondo and Bruhweiler, the IUE findings of co-existing dust and gas clouds around Beta Pictoris are consistent with scientific theories of planetary system formation.

"Many stars like Beta Pictoris show evidence of being surrounded by clouds of gas at ultraviolet wavelengths," says Kondo. "If such data imply that these stars also are surrounded by a protoplanetary gaseous cloud with a disk of dust particles, then many nearby stars may have evolving planetary systems. That's exciting because these stars would offer a unique opportunity to see the way a solar system might appear in formation."

Spectra of Beta Pictoris

Kondo and Bruhweiler used the IUE telescope to obtain the ultraviolet spectra of Beta Pictoris to determine the manner of the absorption of ultraviolet light by the gas cloud and the extinction of the light by the dust cloud. The ultraviolet spectra show an absence of selective extinction of light at shorter

wavelengths, evidence that the star's light is being blocked evenly at all wavelengths by dust particles greater than about 1 micron (millionth of a meter) as reported from infrared data.

"The IUE observations," says Kondo, "indicate the gas is either clumpy or is varying under the pressure of the stellar wind and radiation. If so, this would tend to complement IRAS and ground telescope observations of a substantial dust cloud of protoplanetary material around Beta Pictoris."

Alternative possibility

Kondo and Bruhweiler caution that there is an alternate possibility that the lack of observed extinction could be due to viewing the star just a little off-plane, so that the telescope's line-of-sight was not directly through the disk of orbiting dusty matter.

However, Bruhweiler notes, "that would be unlikely. All evidence seems to point to a belt too thick around Beta Pictoris for the line-of-sight to be missing the dust belt."

John O'Keefe Honored

Dr. John A. O'Keefe, code 681, has received an honorary Doctor of Science degree from Alfred University, Alfred, New York for "his pioneering contributions" to the nation's space program and for "his discoveries in natural glasses." He received the degree at the 1985 commencement exercises on May 11.

"Through investigations of their (tektites) origin and occurrence, he has been able to offer major contributions to understanding the geologic history of this planet - including the disappearance of biological species such as the dinosaur," the citation read.

Dr. O'Keefe, of Goddard's Laboratory for Astronomy and Solar Physics, was a visiting professor of geoceramics in Alfred for four months in 1983. During that time, he co-edited "Natural Glasses," a book consisting of proceedings from a five-day conference at Alfred.



RUNNING WITH HEART—The Goddard team of Barbie Beckford (right), B.J. King, Dawn Oakley (left), Vickie Pendergrass, Becky Lambrose, Grace Lee, Gincy Stezar (center) and Joan Unger placed first in the women's division of the Blake Heart Run 10K April 27 in West Potomac Park, D.C. Stezar, Goddard's Fitness Director, was chairman of the race which raised more than \$30,000 for the American Heart Association. Beckford, King and Unger were top finishers in the competition.

Annual Luncheon Honors Secretaries

Twenty-three individuals and one group received citations here at the Center's tenth annual Secretaries/Clericals Awards Luncheon recently.

Award recipients were cited for the outstanding quality of clerical and secretarial support they render to Goddard. And, as Center Director Noel W. Hinners said in his opening address:

"We know how much we count on their expertise in keeping our schedules straight, our files up-to-date and our correspondence letters perfect . . . and in keeping the office running smoothly . . ."

Director Hinners and Deputy Director, John J. Quann presented the awards to the following persons:

Kathleen M. Lisko, code 100; Janine T. Sefcik, 220; Adriane M. Hurt, 285.1; Cynthia E. Stevens, 286; Victoria L. Odom, 287; Eileen T. Groves, 302; Virginia L. Beard, 400.2; Angela Clark, 400.2; Cheryl A. Jones, 400.6; Sheila A. Hall, 400.6; Deborah A. Bartley, 408; Karen Feldmann, 470; Danielle B. Demyers, 521; Tracy L. Pepin, 650; Ruby L. Cunningham, 662; Lucille W. Parker, 670; Helen G. Shirk, 670; Sandra M. Green, 703; L. Darlene Capone, 713; Terri L. Nalley, 730; Donna M. Dethloff, 733; Norma J. Pallik, 740; Gladys M. Evans, 801.

The Administrative Correspondence Center, code 240, received a group award. Included in the group were: Nora F. Michel, Tania M. Sturdivant, Angela M. Smythers, Shantay C. Norris, Janet L. Richardson and Maggie Wilson.

Guest speaker for the event was Bob Levey, columnist for the Washington Post and commentator for WJLA-TV in Washington.

Correction:

The Editors regret that in the May issue of the Goddard News the telephone number for the Technical Support Group (x9508) of the new Information Technology Center was erroneously listed as x9058.



DISTINGUISHED METEOROLOGIST—Dr. Joanne Simpson, Head Severe Storms Branch, has been named Distinguished Meteorologist for 1985 by KIRO-TV, Seattle.

Simpson Named Distinguished Meteorologist

Dr. Joanne Simpson, Head, Severe Storms Branch at Goddard, has been named Distinguished Meteorologist of 1985 by KIRO-TV, Seattle, Washington. She also will be featured in a traveling exhibition on "Women in Science," sponsored by the Museum of Science and Industry, Chicago, Illinois.

A pioneer in cloud and storm research, Dr. Simpson has been cited by KIRO-TV for her contributions to meteorological studies and is among 12 contemporary scientists selected for the exhibition. The exhibit examines the contributions of women scientists and the influences on their careers.

The exhibit which opens this month at the Museum of Science and Industry, Chicago, is to travel to several places over the next two-and-a-half years: St. Paul, MN; Los Angeles, CA; Fort Worth, TX; Philadelphia, PA; Charlotte, NC; Columbus, OH; and Boston, MA.

Dr. Simpson is the third recipient of the award, sponsored by KIRO in conjunction with the National Weather Service and the Seattle chapter of the American Meteorological Society (AMS).

Among her other awards are the

Carl-Gustaf Rossby Research Medal in 1982, the AMS' highest honor; Woman of the Year by the Los Angeles Times in 1963; U.S. Department of Commerce Silver Medal Award in 1967 and its Gold Medal Award in 1972; Fellow of the American Meteorological Society in 1968; NOAA Distinguished Authorship

Award in 1969; the Professional Achievement Award of the University of Chicago Alumni Association in 1975; and the Vincent J. Schaefer Award of the Weather Modification Association in 1979. She also received the NASA Exceptional Scientific Achievement Medal in 1982.

Dr. Hanel Is Honored

Goddard's Dr. Rudolf M. Hanel, Laboratory for Extraterrestrial Physics, has won one of twelve Department of Commerce awards for outstanding pioneering contributions. He received the award from Secretary of Commerce Malcolm Baldrige recently during a special awards program to commemorate the 25th anniversary of Weather Satellites.

Dr. Hanel is the only Goddard employee to ever receive this award.



SATURN'S E-RING—The ring as depicted in a painting by William Hartman commissioned by Walter Feibelman.

Walt Feibelman Recognized as E-Ring Discoverer

It's taken almost 20 years, but the general consensus in the world's scientific community today is that Goddard's Walt Feibelman, Code 684.1, indeed, did discover Saturn's E-ring in 1966, while working in the physics department at the University of Pittsburgh.

Whether Saturn's E-ring actually existed has caused debate over the years, according to Feibelman, an astro-physicist in Goddard's Laboratory for Astronomy and Solar Physics. But a new book on planetary rings further confirms his findings: "Rings: Discoveries from Galileo to Voyager," (by James

Elliott and Richard Kerr, MIT Press) devotes an entire chapter to the subject.

"By and large the initial reception of the discovery was to ignore it," Feibelman said of his discovery, "or say my work 'must be viewed with deep reservation.' "

Feibelman discovered the E-ring inadvertently on the night of October 27, 1966, while searching for faint satellites of Saturn. To ensure what he saw was authentic, however, he observed the narrow ring for months before publishing the first paper on the findings the next May in "Nature."

Goddard Goal 5: Space Station

Goddard's six goals are being published in each successive issue of the GODDARD NEWS. The goals communicate a clear sense of direction for the Center, and constitute our basic mission in relation to the overall goals of the Agency. Goal number five addresses the Center's role in developing the Space Station.

NASA recently has been directed by the President to proceed in the development of a Space Station. Envisioned as a permanently manned facility with initial occupancy in the early 1990s, the Space Station will be an evolutionary development that will impact most of NASA's programs.

Goddard's heritage in serving a broad range of customers through payload development, spacecraft design and

construction, project management, mission and data operations, NASCOM and tracking activities enable us to contribute uniquely to the development and utilization of the Space Station.

Considering the importance and potential benefits of the Space Station, one of Goddard's goals is to help insure the efficient realization of those benefits by the spectrum of customers. To achieve this goal we will:

- selectively apply our expertise to conceptualization, development, operation and utilization of the Space Station.

- direct our involvement, as a full Space Station team member, towards providing an Agency focal point for satisfying the full variety of customer requirements.

Code 280 Peer Awards

Goddard's Program Procurement Division (PPD), Code 280, bestowed Peer Awards on two employees for the period of April through September 1984 in a ceremony April 2.

Durrell Moore of Code 285.1 received a cash award and a certificate citing his professional special achievements during a difficult four month contract negotiation which included nineteen sessions between himself and increasingly high levels of company management.

Christina Barrasso of Code 285.1 received a cash award and certificate citing her superior clerical/paraprofessional performance based in part on extremely high productivity resulting from excellent, internal motivation.

Program Procurement Division Chief Michael J. Lodomirak presented the awards. The Division's Peer Awards are made each six months to professional and clerical/paraprofessional employees for sustained performance or special achievements.

For the April to September 1984 period, a total of 15 nominations were received and evaluated by the Division's NASA Employee Team (NET). The Code 280 NET includes Elizabeth Austin (284.1), Kelly Dargan (285.2), Cindy Jones (287), Gina Kemp (287), Michael Riley (284.5), Billie Smith (286), Carrollyn Thompson (284.1), and Robert Soltess (late of 285.2 and now at NASA Headquarters).

Blood Donors In May

Recent Goddard donors who gave blood on May 22, 1985 drive include:

	Code	Gallons
Barbara Dyker	553.1	1
Noel Hinners	100	4
Roy Nakatsuka	602.6	1
Jeffrey Newcomer	636	2
Phil Smith	725.3	7
Webster Smith	622	4
William Teawell	400.8	2
John Tomasello	430	7

Please note that the next Blood-mobile visit is scheduled for Wednesday, August 7, 1985, Bldg. 8 auditorium from 8:30 a.m. to 2:30 p.m.

On Eliminating Accidents at Work

**By Wayne McDonald
Goddard Health and Safety Committee**

There is a good probability that you may be one of 200 or so Goddard employees who will be involved in an occupational injury this year if past experience is any guide. Many of these injuries are avoidable if we focus on safety when performing our job-related duties.

Investigations into occupational injuries at Goddard over the last four years has revealed certain factors that are common to each accident. Most of these injuries are caused by "unsafe acts" which directly permit the occurrence of the accident event. Some examples are:

1. Working at an unsafe speed; rushing
2. Inattention to the task being performed
3. Insecure grip in lifting or carrying
4. Knowingly using defective equipment
5. Distraction
6. Poor Housekeeping

Statistics show that each year Goddard employees have about a 1 percent chance of having an injury serious enough to visit the Health Unit. The figure sounds small but consider the fact that our Center has one of the highest Workman's Compensation Claim rates of the entire agency and the 1 percent translates into big dollars which we all pay in higher taxes.

Be aware, stay alert

Be aware, stay alert while performing any activity at work even in office situations. No matter how many times you've done something pay attention so as to be prepared for the unexpected. When carrying heavy objects make sure your vision isn't obscured and that stairs are easy to negotiate. Look for danger signals: wires that buzz (indicating loose wiring); heat at receptacle wall switches (indicating that current is spilling outside of wiring), and acrid smells when you turn on a lamp.

Think prevention. Always unplug

power tools and office machines when you've finished using them. Make sure that power tools and office machines are not overloading electrical circuits.

In this technological age and working in a scientific related environment such as NASA/GSFC we often take "minor" work related activities for granted. However, that's when accidents happen.

Make it a point to have a safe day.

Retirees In May

Goddard's Public Affairs Office makes a point to provide Goddard retirees with the Goddard News, as a means of keeping in touch. The following listed below are the latest folks to say goodbye to Goddard. And hello to good health and happy retirement. Names, codes, and years of service follow:

Robert L. Bender	754.1	35
John K. Carl	514	27
Helen M. Neumann	705	18
Guido Parreca	663.3	18
Mary H. Williams	244	32

Upcoming Launches

<u>Vehicle</u>	<u>Date</u>	<u>Crew</u>	<u>Launch Site</u>	<u>Payload</u>
L/V Ariane	July 2		Kourou, French Guiana	Giotto (European Space Agency, Comet Halley Intercept Mission Satellite)
51-F Challenger (OV-099)	July 12	7	Kennedy Space Center, FL	Spacelab 2
L/V Ariane	Aug. 1		Kourou, French Guiana	SBTS-2, ECS-3
51-I	Aug. 10	7	Kennedy Space	Syncom IV-4 (Hughes Geosynchronous Communication Satellite) ASC-1 (American Satellite Co.) MSL-2 (Materials Science Lab.) Ausset-1 (Australian Communication Satellite) CFES (Continuous Flow Electrophoresis System)
Atlas Centaur	Sept. 17		Western Space & Missile Center Vandenberg AFB, CA	Intelsat Communications VA F-12



A MAN AND A MONUMENT—Dr. John Schutt, top, poses with the Statue of Liberty as painters, below, apply Schutt's coating to the Statue's interior.



Statue of Liberty

Continued from page one

(polymer-based) and inorganic (silica-based) zinc dust compounds, their long curing time and short life in coastal areas.

By the fall of that year Schutt—who holds a PhD in chemical engineering from the University of Rochester, New York—had hit “paydirt” with a magic formula: increase the ratio of silicon dioxide to potassium oxide in the commercial potassium silicate and add a silicon ingredient, the latter to increase economy and ease of application.

Nontoxic, nonflammable

To the delight of NASA and structural steel specialists, Schutt's coating is non-toxic and nonflammable. It has no organic emissions, is fast-drying (bonds to steel in just 30 minutes), and is compatible with both solvent and water-based topcoats and durable. The estimated life of IC-Zinc 531, manufactured by Inorganic Coatings, Inc., West Chester, PA, is up to 50 years.

Proof of its durability can be seen in several places throughout the U.S.: The Columbia River Bridge, Astoria, Oregon; the Golden Gate Bridge, San Francisco, CA; antennas in Hawaii and Canton Island in the South Pacific, and at the Kennedy Space Center. Some applications have endured in mint-perfect condition since the mid-1970s.

Statue dedicated 1886

Of course, that's a relatively brief span in Miss Liberty's memory. She goes back a long way—to her dedication by President Grover Cleveland in 1886.

When the July 1985 fireworks long have faded, her New York Harbor reflection will mirror her restored outside beauty.

And as she looks deeply at her image, she'll remember that it was John Schutt's invention that brought her long-lasting good looks inside, too.

NASA
National Aeronautics and
Space Administration

Goddard Space Flight Center

Greenbelt, Maryland and Wallops Island, Virginia

Goddard News

The GODDARD NEWS is published monthly by the Office of Public Affairs, Goddard Space Flight Center, Greenbelt, Md. 20771. Deadline for submitted material is two weeks before the date of publication. For additional information, contact Charles Recknagel 344-5565. The GODDARD NEWS staff is:

Executive Editor	James C. Elliott
Managing Editor	Charles Recknagel
Senior Editors	Carter Dove and Joyce Milliner (Wallops)

**Mail your story to the
Goddard News (Code
130), or call the Editor
at 344-5565**