NASA
National Aeronautics and Space Administration

GODDARD NEWS

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Satellite repositioned to fly through comet's tail in 1985

by Charles Recknagel

In what is sure to be the most complex set of orbital maneuvers NASA has ever undertaken with an unmanned spacecraft, Goddard has begun moving a 4-year-old satellite on a series of looping trajectories which will enable it to study the Earth's geomagnetic tail until December 1983, fly across the wake of comet Giacobini-Zinner in September, 1985, and study the solar wind's effect on Halley's Comet during late 1985 and early 1986.

The satellite, the International Sun-Earth Explorer (ISEE-3) will be the first to conduct an in-depth survey of the Earth's geomagnetic tail and the first spacecraft ever to fly through a comet's tail. The spacecraft will pass within 3,000 km of comet Giacobini-Zinner's head.

Goddard flight controllers began moving ISEE-3 on June 10, redirecting it from a position 1.6 million km, from the Earth where it already has been the first satellite to orbit a libration point, i.e., a point of balance between the satellite's centrifugal force and the Earth's and Sun's gravitational pulls. Suspended at the libration point, ISEE-3 has been monitoring the solar wind of charged particles and energy streaming from the Sun toward Earth since launch in 1978. Now Goddard will use the satellite's magnetic field instruments and charged particle monitors to chart the Sun-Earth relationship on the Earth's dark side as well as study cometary composition and interaction with the solar wind.

Because the mission will use a spacecraft already in orbit, project directors expect all the observations to cost under $5 million. Most of this cost will be directed to upgrading NASA's Deep Space Network to capture ISEE-3's faint signals as the satellite moves as far as 96.5 million km. from Earth. According to the mission's chief architect, Dr. Robert Farquhar, attempting to duplicate the ISEE observations with new spacecraft would likely cost as much as $200 million. "We're getting a bargain of science in tight budget days," Farquhar notes.

ISEE-3's second life begins with the fact that the spacecraft already has outlived its designed lifetime of 3 years monitoring the Sun, remains in excellent condition, and carries ample fuel supplies. Relieving it of its duties at the Sun will allow it to be used as a precursor to more detailed mapping of the Sun-Earth neighborhood by NASA late this decade. It also will afford a timely opportunity to expand global cometary studies already scheduled for the appearance of Halley's comet in 1985. Intercepting the smaller comet Giacobini-Zinner in advance of international probes to Halley's comet not only will permit comparative studies between the two comets, it also will afford a fly through of a cometary tail which the Halley probes will not attempt.

Sending ISEE-3 on a trip to three different targets over almost 4 years and billions of miles will pose tough challenges for flight engineers, who must extend ISEE's fuel range by a series of gravity assists from the Moon. The closest of these lunar swingbys will bring ISEE-3 within 100 km. of the Moon's surface on December 23, 1983, as the satellite starts away from the Earth on a

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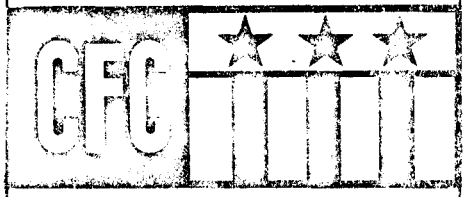
Inside

Message from the Director

Thank you



In my initial message to you regarding the kickoff of the Goddard Combined Federal Campaign on October 5, I asked that you OPEN YOUR HEART–SAY YES–seriously consider the importance of the campaign and what it will do for millions of less fortunate people.

One month into the campaign, the Center had reached 53.2 percent of its goal with 33.4 percent participation. As of December 14, the center reached 103.2 percent of its goals of $202,000 to the National Capitol Area campaign with 66 percent participation; i.e., 2,026 contributions totalling $209,000. Several employees at Goddard made sizeable contributions to the Central Maryland Area campaign. Last year there were 171 contributions totalling $20,800. This amount is not counted toward the Goddard goal; however, we again came out a winner in both areas.

Thanks to all the coordinators and keyworkers for the hours of effort and personal dedication it took to make this campaign a success and thank *you* for opening your hearts and helping to make this a better year for many less fortunate than we.

Noel W. Hinners
Director

Snoopy Awards

Individuals and groups cited for contributions to success of manned space flight

Eighty-two persons and 14 groups received Silver Snoopy Awards at Goddard last month for their outstanding job performance toward flight crew safety or mission success. Silver Snoopy Awards are part of NASA's [illegible] Flight [illegible] ness Program [illegible] designed to instill in those [illegible] with manned spaceflight [illegible] a sense of personal involvement and responsibility. The following received awards.

INDIVIDUAL AWARDS

[illegible] Addison—CSC
[illegible] Ahalt—NASA
[illegible] Austin—Raytheon
[illegible] Badger—NASA
[illegible] P. [illegible]klin—NASA
[illegible] Blevins—Bendix
[illegible] J. Bodin, Jr.—NASA
[illegible] N. Bowen—Bendix
E. Le[illegible]—Bendix
Janet [illegible]—NASA
[illegible]—Bendix
[illegible] Comberiate—NASA
[illegible] J. [illegible]—NASA
[illegible]—University of Chile
[illegible] L. [illegible]—Bendix
[illegible] E. [illegible]—Bendix
[illegible] P. Gale—[illegible]
[illegible] Y. G[illegible]—NASA
[illegible] N. Ganch—Bendix
[illegible] Gaynor—Bendix
[illegible]—INTA*
[illegible]—CSC
Raymond J. Graleski—Bendix
Anthony E. Grandi—NASA
Ernest Hairston—NASA
Arthur L. Haislip—Bendix
Richard Heasty—CSC
Leroy C. Henry—Bendix
William [illegible], III—Bendix
Michael C. Hogan—Bendix
[illegible] N. Hoge—Bendix
Marion F. Humphreys—Bendix
Warren L. Jackson—NASA
Calvin L. James—Bendix
George T. Jenkins, Jr.—NASA
Bobby G. Johnson—KSC/RCA
Philip H. Johnson—Bendix
George J. Karras—NASA
Francis E. Kent—Bendix
Leonard A. Kozak—CSC
Virginia A. Lacer—Raytheon
Walter La Fleur—NASA
Edward J. Larson—Bendix
Robert J. Leupold—Bendix
Patrick M. Levesque—Bendix
Zelma P. Manns—Bendix
[illegible]—NASA
[illegible]—Bendix
[illegible]—Bendix
[illegible]—Bendix
[illegible]—NASA
Barba[illegible]
Patricia [illegible]
Jose An[illegible]
Peter J. Pat[illegible]
Robert D. P[illegible]
Milton R. Po[illegible]
Robert A. Po[illegible]
Charles Po[illegible]
Harry C. [illegible]
Teewyn Ro[illegible]
Severino [illegible] San[illegible]
Irvin[illegible]lzberg—[illegible]
[illegible] P. Skiscim—[illegible]
[illegible] M. S[illegible]h—S[illegible]
Daniel [illegible]—NASA
James [illegible]—NASA
Steven [illegible]
Robert C. [illegible]—NA[illegible]
Stephen M. Thompson[illegible]
John A. Tre[illegible]ner—N[illegible]
Virgil True—NASA
Harrison E. Ut[illegible]—[illegible]
Elmer P. Vogt—Bendix
Lewis Wainwright—Australian Department of Science and Technology
Albert B. Washburn, Jr.—NASA
Tracey L. White—Bendix
Barry C. Wishner—CSC
Lynn F. Woodward—NASA
Daniel W. Wyczalek—[illegible]
Henry Zavel[illegible]—CSC
David J. Z[illegible]—NASA

*Instituto Nacional De Tecnica Aeroespacial

GROUP AWARDS

Boiler Plant Operators
Goddard

Donald K. Adams
William R. Bumbrey
Steven B. Hill
Leonard W. Kayton
David A. Keenan—Accepting
Dennis E. Kundin
Michael C. MacMurray
Lloyd C. Payne
Nicholas H. Phipps
Dolphas A. Ragland
Norman Rembert, Jr.
James P. Shea
Eugene H. Smith
[illegible]
[illegible]
Kenneth [illegible]

Com[illegible] Team
Bendix [illegible] Corporation

[illegible]

[illegible] Group
[illegible]

[illegible]

[illegible]
Bendix [illegible] Corporation

John J[illegible]
George Kukoly
Harold W. Lindgren

Do[illegible] Office
Bendix [illegible] Corporation

[illegible]
[illegible]
[illegible]
[illegible]—Accepting
Elizabeth Mathers

Frequency Management Operations Support Team Goddard

Robert E. Ambrose—Accepting
Edward E. Angle
Anderson Bennett
Robert W. Borek, Sr.
Daniel V. Bosque
Matt Carmack
Ernest DeRosa
Eduardo Diaz
Steven C. Fair
Ronald J. Grandmaison
Henry Iuliano
George T. Jenkins

Continued on next page

Snoopy Awards

Continued from previous page

Arthur G. Krempin
Gerald L. McComas
James C. McKinney
Gary A. Morse
James N. Scott
Arthur L. C. Sigust
Lawrence P. Skiscim
Carl A. Smith
Angelo Taiani
Thomas N. VanStavern
Lynn F. Woodward
William R. Zears, Jr.

GRTS Computer Programming Group
Computer Sciences Corporation

Dr. Bryan Brown
Ha Chau
Stan Jurgielewicz
Elizabeth Tervo–Accepting
Marie Whitaker
Dr. Barry Wishner

Mission Support Team
Computer Sciences Corporation

Edward Albrigo
Patricia Bergman
Anne Golike
Don Haxton
Isao Hoshi–Accepting
Leonard Kozak
Timothy Rand
Robert Summa

Network Operations Managers
Bendix Field Engineering Corporation

John P. Adams–Accepting
Harry C. Delamater
Robert L. Frazier
Ernest Keith
Jack Lee
Eugene H. McCullough
Thomas W. Morris
James F. Ryan
Herbert M. Small

Network Support/Spacecraft Command Encoder Team
Bendix Field Engineering Corporation

Lee A. Campbell
Harvey D. Correll
Richard W. Seeley–Accepting
Josef W. Segur

Networks Management Section
Goddard

Robert E. Ambrose
Ralph N. Banning
Henry Iuliano
Thomas M. Janoski
Gary A. Morse
Lawrence P. Skiscim
Carl A. Smith
Mark Stokrp–Accepting
John L. Walker

Shuttle Simulations Team
Goddard

Robert L. Burns
Philip B. Farwell
Ralph M. Riordan
Calvin A. Segree
Robert R. Stanley–Accepting
Hector A. Zayas-Aguiar

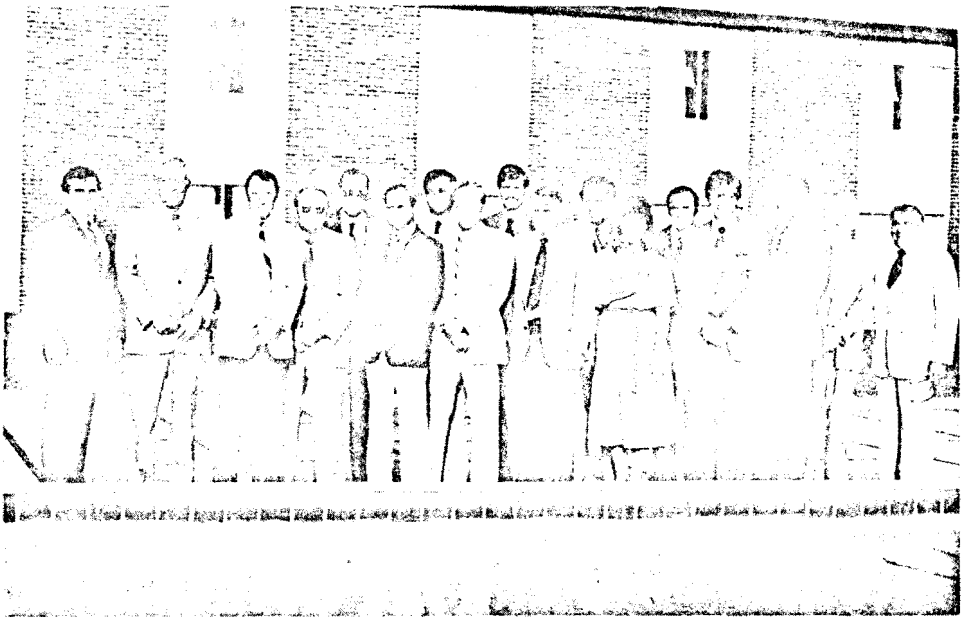
System Integration and Test Group
Computer Sciences Corporation

Raymond Addison
James Birch–Accepting
Isao Hoshi
Richard Looney

Utility Systems Operators
Goddard

John R. Bryan
Albert M. Dunnington–Accepting
Franklin D. Habas
Patrick L. Hinkson
Jerome H. Horton
James D. Huston
Abram C. Irby
Robert W. Langley
Gerald F. Moran
Kenneth E. Purcell
Howard L. Shultz
Victor L. Swartz
Robert L. Ward

Goddard's STS-5 launch honorees



From l-r: Larry Hare, BFEC's director, Public Relations; Dr. Robert Yost, CSC; Walt LaFleur, deputy director of Networks; Networks Director Richard S. Sade; Albert B. Washburn; Francis Bowen; Carl Church; Joe Kueberth; Allan N. Ganch; Howard N. Hoge; Jack Lee; Helene McNally; William T. Burns; Warren J. Mitchell; James A. Jackson; James J. Kerley; and A. T. Dannessa, chairman, Goddard Manned Flight Awareness Council.

Goddard's Manned Flight Awareness Council selected 12 Goddard/Contractor employees as STS-5 launch honorees. The 12 were chosen from 52 nominees and attended an honoree/astronaut reception, toured the Kennedy Space Center, and viewed STS-5's launch from a VIP area. The following briefly tells why each was selected.

Francis Bowen–Bendix Field Engineering Corp. (BFEC)

Bowen has been cited for his outstanding work in the installation and operation of Botswana and Dakar tracking stations in support of Shuttle missions. He was the Project Manager (PM) responsible for the installation of a UHF voice facility at Baborone, Botswana, South Africa for STS-1 and 2. He was also the PM for the tracking station at Dakar, Senegal.

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ISEE

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1 year, 8 month journey to the first of its cometary encounters. But the toughest challenge of all will be flying through a comet's tail. Little is known about a comet's environment and, in the case of Giacobini-Zinner, even the comet's exact orbital path remains to be determined.

Comet Encounters

Giacobini-Zinner is an old and relatively small comet which passes by the Earth approximately every 13 years. The comet's glowing head of gases and dust blowing off its core reaches a visible size of 50,000 km (intermediate in size between the Earth and Jupiter) and tapers into a tail stretching a half million kilometers long. In common with other comets, Giacobini-Zinner is believed to have formed in the vast reaches of space beyond Pluto, and to have been pulled into our solar system by gravity. It has been observed since 1900, trapped in a circuit between the Sun and the orbit of Jupiter.

As Giacobini-Zinner approaches to within 70.8 million km. of Earth, where it will be met by ISEE-3, astronomers will be working against the clock to precisely pin down its orbital path. The comet's orbit is known to vary as much as half a million kilometers. The task of tracking the incoming comet precisely enough for a spacecarft encounter will fall on NASA's Jet Propulsion Laboratory, while Goddard flight controllers stand ready to give a last minute course correction to the satellite as necessary.

ISEE-3 will attempt to pass through Giacobini-Zinners' tail within 3,000 or so kilometers of the comet's head on September 11, 1985. The closeness of the approach, and the likelihood of encountering dust spewing from the comet's core raises a potential for damage to monitoring instruments. However, the lead ISEE investigator for the cometary encounter, Dr. Ed Smith of the Jet Propulsion Laboratory in California, expects the danger to be minimal. "The dust should be of extremely low density," he predicts. Smith explains that several times in the past the Earth has moved across the path of debris left by Giacobini-Zinner and has been showered with meteors. Although spectacular, the meteor trails into the Earth's atmosphere were very short lived, indicating the low density of their makeup.

As ISEE-3 moves through Giacobini-Zinner's tail, its instruments will provide the first in situ measurements of a comet and its environment. One question they will address is the nature and rate of the ionized gases released from Giacobini-Zinner. Another question that could be answered is how the comet head and tail are affected by passage through the solar wind. Of particular interest is whether the solar wind interaction might account for the mysteriously high rate at which ionized material spews from a comet. The rate is known to be 10 times higher than can be explained by evaporation due to solar radiation.

Why do scientists want to know more about the composition of comets and what changes they undergo as they race endlessly through the solar system? Principal investigator Smith notes that comets are bits of "archaeological evidence" of conditions in the vast expanse of interstellar space. Comets are formed under conditions totally different from the planets of our solar system and appear to consist principally of ice mixed with dust, though "cold chemistry" within them has also produced more complex molecules such as methane, ammonia, and cyanogen. "If we can sort out how comets have been changed since their capture into our solar system," Smith says, "we can roll back the clock to their pristine state, and have a very good sample of conditions at distances from the Sun we can only imagine visiting at present."

ISEE-3 will attempt to fly through a comet's tail in 1985. It is shown here being checked out before its launch in 1978. Goddard has begun moving it to enable it to study the Earth's geomagnetic tail, catch a comet, and study the solar wind's effect on Halley's Comet.

The Earth's Tail

Months before the comet encounters, ISEE-3 will have spent the better part of a year exploring the geomagnetic tail of the Earth beginning October 19, 1982, and concluding near the end of 1983. The distant geomagnetic tail measurements will be the first since 1968 and will return information about regions of the tail never before studied. The tail will also be of interest for comparison with that of Giacobini-Zinner because there are intriguing differences and similarities.

Unlike a cometary tail, the tail of the Earth is invisible, and due only in a small part to molecular outgassings from the planet. Instead, the tail is created by the solar wind of charged protons and electrons from the Sun passing around the Earth's magnetic field, like a stream tapering out behind a boulder. But the Earth's tail is comet-like in some respects. Both include a "plasma sheet" region within them, where the charged particles are particularly concentrated in a stream. Energy is thought to flow back and forth along such streams and to affect the Earth and the cometary nucleus in little known ways. "We may learn more about the Earth from studying the comet and vice versa, says Dr. Fred Scarf, lead investigator for ISEE's Earth tail studies. "The dynamics of their tails seem to be similar even while their materials are different."

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launch honorees

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William T. Burns–Goddard/Wallops

Burns has been the project engineer responsible for the Goddard/Wallops STS mission support planning. He provided expert mission planning from STS-1 through STS-4 that reflected a high level of professionalism, resulting in all mission support requirements being met or exceeded.

Carl Lee Church–BFEC

Church has been cited for his dedicated work in the design and fabrication of four UHF air-to-ground voice stations for Shuttle support; and for his evaluation and corrective actions and recommendations at Yarragadee, Australia, which had a significant impact on mission success.

Allan Ganch–BFEC

Ganch designed the STDN Shuttle Range Safety capability. His work on the Range Safety Program turned an area of concern, prior to STS-1, into the most thoroughly controlled and monitored area of the Shuttle mission by STS-3. Ganch has since restructured STDN Range Safety software to provide a level of flexibility for future changes.

Howard N. Hoge–BFEC

Hoge is Goddard's Shuttle C-band radar advisor and helped to develop the C-band tracking network for Shuttle support as it is today. He was the prime developer of the test and training plan for the KC-135 flybies as well as the SR-71 re-entry and landing tests.

James A. Jackson–Goddard

After STS-1, Jackson developed and implemented the existing Shuttle STDN metric tracking test plan. The plan requires a weekly systematic testing of all STDN Shuttle support trackers beginning two months before the scheduled launch. It s goal is to bring the network to peak-level-performance for each Shuttle mission. The plan is currently used and has contributed significantly to the network's success in meeting the Shuttle's accuracy requirements, and in providing high quality metric tracking data.

James J. Kerley–Goddard

Kerley is cited for his outstanding achievements in designing, developing, and applying a system of environmental test facilities, which was critical for the qualification testing of the OSS-1 and GAS Shuttle payloads.

Joseph Kueberth–Goddard

Kueberth is the lead engineering representative for the design, development, modification, testing, and evaluation of all antenna systems in STDN. He designed and assembled the first antenna to support the landing of STS-1 at the Buckhorn Station at Dryden. He later modified the antenna and added a second one to support future landings.

Jack Lee–BFEC

Lee is cited for his performance as Network Operations Manager (NOM) for STS-1 through STS-3 and for his leadership role as lead NOM for the fourth Shuttle mission. In addition to his sustained high level performance throughout the Shuttle program to date, he has been instrumental in training NOM's in Shuttle air-to-ground procedures.

Helene McNally–Computer Sciences Corporation (CSC)

McNally is a Computer Scientist responsible for coordinating requirements, designing, and developing spacecraft Command Encoder (SCE) software used on STDN to receive and initiate uplink command data to the Shuttle. She has been a major contributor to many Network Operations Control Center software systems used in support of the Shuttle. Her primary work has been in the development of command software.

Warren J. Mitchell–CSC

As the Shuttle coordinator for the Operations Support Computing Facility (OSCF) from STS-1 through STS-4, Mitchell provided invaluable input to mission and testing procedures, developing new operational aids and procedures. He consistently improved OSCF's status in Shuttle support to a point of near no-fault support.

Albert B. Washburn, Jr.–Goddard

Because of bad weather, STS-3's landing had to be changed to White Sands, New Mexico. Washburn played a key role in coordinating Goddard's effort at White Sands. He analyzed the location and placement of various equipment required to implement communications and data systems. He also identified, coordinated, and assisted in the establishment of a microwave link within the confines of White Sands to provide real-time data flow to Goddard and other NASA facilities.

NASA/Goddard Honor Awards

The 1982 Joint NASA/Goddard Honor Awards Ceremony was held at Goddard last month with NASA Administrator James M. Beggs presiding. The following received awards.

NASA HONOR AWARDS

OUTSTANDING LEADERSHIP MEDAL

Mr. David W. Grimes/Former Employee
Mr. Gerald W. Longanecker/480
Mr. Henry W. Price/720

EXCEPTIONAL SCIENTIFIC ACHIEVEMENT MEDAL

Dr. Robert A. Langel/922
Dr. Hans G. Mayr/961
Dr. Jagadish Shukla/911
Dr. Joanne Simpson/914
Dr. Jean Swank/661

EXCEPTIONAL ENGINEERING ACHIEVEMENT MEDAL

Dr. Allan Sherman/713

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Honor Awards

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EQUAL OPPORTUNITY MEDAL

Mr. Maceo A. Leatherwood/253.3
Mr. Alton D. Payne, Jr./289

EXCEPTIONAL SERVICE MEDAL

Ms. Dorinda S. Bailey/120
Mr. Stephen J. Brodeur/731
Mr. Larry J. Early/021
Mr. Donald L. Feller/031
Mr. Theodore C. Goldsmith/730
Mr. Kenneth Kissin/Former Employee
Mr. John B. Lallande, Jr./751.2
Mr. John H. Lane/742
Mr. Raymond Mazur/870.1
Mr. Harry G. McCain/Former Employee
Dr. S. Harvey Moseley/693.2
Dr. Werner M. Neupert/682
Mr. Seaton B. Norman/843.2
Mr. John Paulkovich/711.2
Mr. James M. Stevens/804.4
Mr. Meredith W. Wilson/716.2

PUBLIC SERVICE MEDAL

Dr. Howard B. Gordon/University of Miami

GROUP ACHIEVEMENT AWARD

NAME OF GROUP

Antarctic Sea Ice Atlas Authors
Black Brant X Development Team
Cape Perry Campaign Team Members
Delta Project
Get Away Special Team
Image Processing Special Engineering Team
Ocean Colar Experiment (OCE) Team
OSS-1 Mission Management, Integration, Test, Operations, and Science Teams
STS-3 Telemetry Support Team

PUBLIC SERVICE GROUP ACHIEVEMENT AWARD

GE/Matsco Sounding Rocket Group
Mr. George Van Nostrand
General Electric

GROUP ACHIEVEMENT AWARD

Snow Removal Crew (Raytheon Service Corp.)
EGRET Materials Support
Data Processing Operations Team
Science and Applications Computing Center's System Conversion Team
IUE Observatory Staff–CSC
IUE Operations Control Center Staff–BFEC
Documentation Section/Support Services Branch
Station Directors STDN

Think About it...

Praise is a debt we owe to the virtues of others, and is due to our own from all whom malice has not made mutes, or envy struck dumb. – Sir Thomas Browne.

GODDARD HONOR AWARDS

EXCEPTIONAL PERFORMANCE AWARD

Ms. Helen T. Bonk/562
Mr. Charles S. Brown/284.6
Ms. Sandra A. Buffalano/220
Mr. Harry Chernikoff/311.3
Dr. Dennis Chesters/915
Mr. Dennis C. Evans/725
Mr. Joseph F. Hennessy/510.1
Mr. Bertrand L. Johnson, Jr./973
Mr. Hongsuk H. Kim/925
Mr. Daniel A. Klinglesmith, Jr./685
Mr. John D. Mangus/717
Mr. Edward E. Mayo/742
Mr. Dennis K. McCarthy/731
Mr. Gifford P. Moak/284.6
Dr. Gerald R. North/915
Dr. David A. Randall/911
Mr. George T. Roach/402
Mr. James W. Ryan/974
Dr. Robert E. Samuelson/693.2
Mr. Steven A. Smith/841
Mr. William P. Spear/284.6
Mr. Philip A. Studer/716
Dr. Masahisa Sugiura/696
Mr. Jack J. Triolo/732.2
Mr. Schuyler C. Wardrip/854
Mr. Donald D. Wilson, Sr./840

OUTSTANDING SERVICE AWARD

Mr. Norman Ackerman/732
Mr. Robert H. Arvey III/962
Mr. Melvin D. Banks, Jr./563.3
Mr. Anthony J. Caruso/717
Mr. Carroll H. Clatterbuck/313
Mr. Harry D. Cyphers/744.2
Mr. George Demas/513
Mr. Francis A. O'Grady/271
Ms. Brenda A. Parkinson/310
Mr. G. Ernest Rodriguez/711.2
Dr. Alan E. E. Rogers/Haystack Observatory
Mr. Thomas J. Savage, Jr./022.1
Mr. Harland F. Scholl/293
Mr. Garrod D. Shaw/151.2
Mr. Louis Shelton/Republic Management System, Inc.
Mr. Bertrand D. Gagnon/960
Mr. Dennis M. Giblin/603
Mr. Dan N. Harpold/962
Dr. Albert V. Holm/Computer Sciences Corporation (CSC)
Mr. Joseph R. Johns/935
Mr. Patrick M. Kelly/253
Mr. Paul J. Kushmeider/854
Mr. Blair Slaughter/Sperry Corporation
Mr. Charles Sommers/Bendix Field Engineering Corporation (BFEC)
Mr. John K. Steckel/720
Mr. John O. Tresansky/204
Dr. Barry E. Turnrose/Computer Sciences Corporation (CSC)
Mr. Charles E. Woodyard/873.1
Mr. C. Wayne Wright/971
Mr. Albert A. Yetman/713

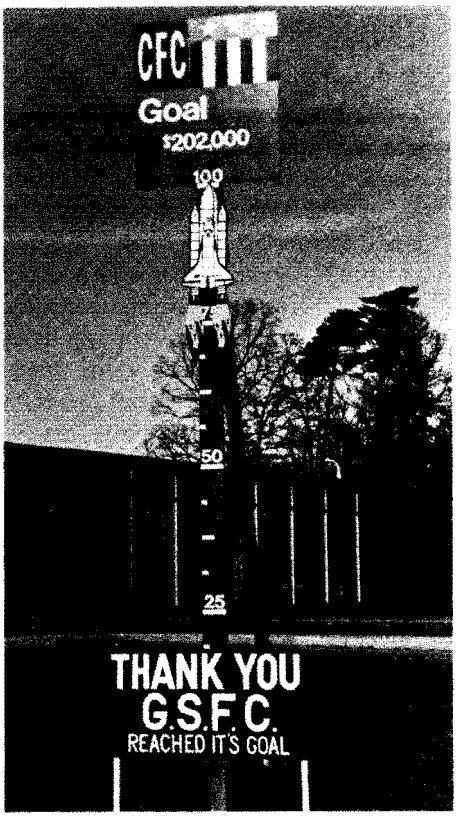
EQUAL OPPORTUNITY AWARD

Subcommittee on Role Modeling for Young People

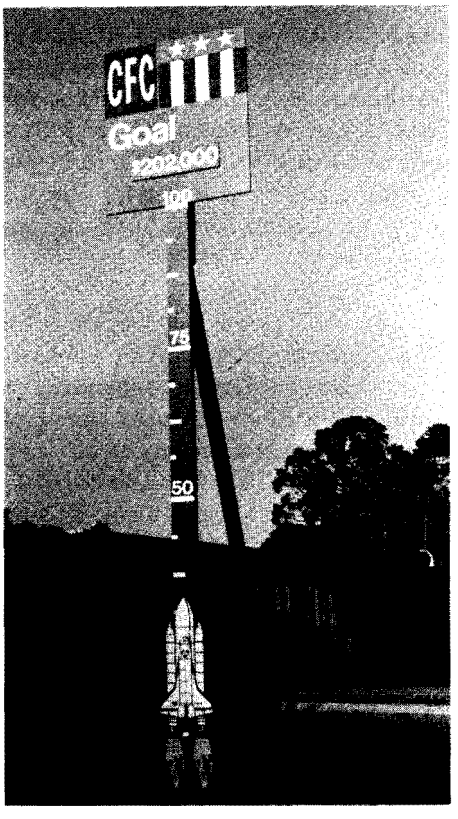
PUBLIC SERVICE AWARD

Mr. Theodore A. Ferraro/853.2
Mr. William S. Kramar/242
Mr. Leon Woodard/853.2

Goddard CFC Committee



From l-r are members of Goddard's CFC fundraising committee. Clay Magee, code 703; Barry Miller, 150; Marietta Sturgell, 300; Diane Lewis, 802.2; Cathy Bayer, 100; Sandy Morey, 800; Jan Crain, 225; and Harry Montgomery, 903. Not pictured are Dr. Friedrich Von Bun, Goddard CFC chairman; Bob Luddy, 503; and Pat Higgs, 400.



Lynn Zink of Northrup Services makes a $550.00 CFC contribution to Ethel Lindsay, code 750 CFC chairperson. Left: Tom Amacher, manager for Northrop Services. Right: Norm Martin, chief code 750.

ISEE

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The ultimate goal of ISEE-3's geomagnetic tail exploration is to build a more complete picture of the physics of energy flow from the Sun into distinctly different sectors of the Earth's magnetosphere. The pattern of this flow affects the planet's atmosphere and influences the climate and weather in poorly understood ways. The physics of the process on the dark side of the Earth, whose tapering tail ISEE-3 will explore, are particularly unclear.

ISEE will pass across the tail at intermediate distances along its length which has never been explored by satellites. A number of spacecraft have mapped the tail close to the Earth and Pioneer-8 has observed the tail beginning to break up at a distance of 500 Earth radii (3,200, 000 km.) from the planet. ISEE's first probe will be 80 Earth radii from the Earth (510,000 km.) and later it will explore out to a distance of 235 Earth radii (1,500,000 km). As in the cometary encounters, the spacecraft will be returning information regarding magnetic fields which define the tail and trap plasma and energy within it; and the nature of the plasma itself (for example, its flow speed, density, temperature, composition and boundaries); it will also seek where and why the tail eventually breaks up.

End of Mission

The ISEE-3 exploration of the Earth's geomagnetic tail and two comets will conclude in 1987, almost a year after its final observations of Halley's comet. Though it will continue to be taking measurements of interplanetary conditions in the solar wind, ISEE-3 by this time will be 120.7 million km. from Earth and at the limit at which its weak radio signals can be detected. The limiting factor is the satellite's low gain antennas which were originally designed for use only to a distance of 1.6 million km.

To enable ISEE-3 to communicate far beyond its original design, NASA's Jet Propulsion Laboratory is upgrading its Deep Space Network to receive the weak signals from the satellite. Ordinarily, the Deep Space Network is used to communicate with distant interplanetary probes such as Pioneer and Voyager. The upgrade will give the Deep Space Network the option of also receiving information from any satellite such as ISEE which transmits in the portion of the S-band used for nearby Earth orbits.

Thanks to the courtesy of Code 250, Goddard had yuletide music last month. A set was arranged through Bill Boyer, drummer for Goddard's MAD musicians. L-r, members of the Music & Drama Club are: Bill Shenk, Charles E. White, Tom Cherrix, Jim Merel; and on piano, Jeff Childs.

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Annual Audubon bird count at Wallops

For the thirteenth consecutive year, the Wallops Mainbase and island, north of the Coast Guard station, were surveyed for birds as part of the Chincoteague Christmas Bird Count. The count is part of the nationwide Audubon Christmas Bird Counts that are conducted during the two week period from December 18th through January 2. The Chincoteague count was held December 28th. A total of 89 species were seen on the NASA property by four observers.

The warm winter affected the bird count favorably and unfavorably. An Eastern Phoebe and a Black-and-White Warbler, birds that normally winter further south, were seen on Mainbase. Less birds were seen on the island where good wintering habitat was waiting the arrival of birds that typically stay as far North as the weather will allow. Ducks were generally scarce with only one Oldsquaw and a lone Bufflehead seen when 50 to 100 of each might be expected. Scaup, Snow Geese and Canada Geese were absent and Black ducks and common Goldeneye were present in small quantities. Only Brant and Red-breasted Mergansers were in good numbers. Also very scarce on the island were Sandpipers. Normally 500 to 100 can be seen on the mudflats at low tide. This year only 47 Dunlin and 198 Sanderlings were present.

The Red-headed woodpecker colony that breeds in the summer on the base is one of the unique bird colonies of the local region. Since 10 to 15 pairs breed in some years, this colony is the largest known north of the Carolinas and east of the Appalachians. For the entire Eastern Shore this is the only area where the bird can be guaranteed from year to year.

A preliminary tally for the entire Chincoteague count, which includes the Chincoteague National Wildlife Refuge, is 153 species. People wanting to see the local bird species can thus see more than one-half of them on the NASA property.