GODDARD NEWS October 1975 Vol. 23, No. 7

GOES . . . GOES . . . and GOES

THIS IS THE FIRST image produced by the Geostationary Environmental Operational Satellite (GOES-A) at noon on October 25, 1975. The satellite was launched from Cape Kennedy on October 16, 1975 aboard a Delta Launch Vehicle for the National Oceanic and Atmospheric Administration. GOES joins two R&D predecessors, Synchronous Meteorological Satellite-1 and -2. GOES-A has been placed into synchronous orbit over the equator at 55 degrees W. longitude. It was turned over to NOAA on October 30, 1975, according to Goddard's Project Manager Bob Pickard.

WILLIAM H. ROCK NAMED DEPUTY DIRECTOR OF FLIGHT RESEARCH CENTER

Mr. William H. Rock has been named Deputy Director of the Flight Research Center, Edwards AFB, California, effective November 9, 1975.

Since 1973, Mr. Rock has been manager, sciences, applications, and ASTP program office and Director, Information Systems, at the Kennedy Space Center. He has been associated with various Applications and manned flight programs at Kennedy Space Center since 1968. Mr. Rock's contributions to the manned flight program were recognized by NASA in awarding him the Outstanding Leadership Medal for ASTP in 1975 and the Exceptional Service Medal for Skylab in 1974. Earlier he served both at NASA Headquarters and at the Goddard Space Flight Center in Quality Assurance managerial roles. Prior to his joining NASA in 1964 he was associated with several leading aerospace firms. Mr. Rock served as a first Lieutenant of Ordnance in the U.S. Army from January 1959 through January 1961. He was awarded the Army commendation medal.

Born in Williamsport, Pa., Mr. Rock received a B.S. degree in Engineering Science from the Johns Hopkins University in 1958.

DR. NORDBERG TAPPED FOR DUAL AWARDS

In ceremonies conducted at NASA Headquarters on 11 November, Dr. William Nordberg, Director of Applications (Code 900) received NASA's highest award, the Distinguished Service Medal.

In presenting Dr. Nordberg the DSM, Dr. James C. Fletcher, NASA Administrator, praised Dr. Nordberg's "diligence, leadership and extraordinary contributions to the agency and mankind."

Concurrent with his DSM award, Dr. Nordberg was informed of his selection as NASA's first recipient of the prestigious William T. Pecora Award. Established in 1974, the Pecora Award honors the memory of the eminent scientist who was Under Secretary of the Interior ('71-72), and Director of the U.S. Geological Survey ('65-'71). A pioneer of Interior's remote sensing research efforts, Dr. Pecora is considered to be the "Father of LANDSAT."

While Dr. Nordberg's major contributions to LANDSAT have been in the field of meteorology, he is now responsible for managing the day-to-day research operations of the LANDSAT 1 and 2 satellites. Pictures from these satellites have been used in making planimetric and thematic maps of large areas. The maps can be updated every 18 days and are used on national and global scales for exploring, monitoring and managing the resources and environmental conditions of lands, lakes, rivers and oceans.

LANDSAT 1, which was launched on July 23, 1972, transmitted data during its first year of operation for the use of more than 300 investigators from 38 countries.

Their work proved the usefulness of LANDSAT data in such fields as land use, agriculture, forestry, range management, marine resources, oceanography, oil and mineral exploration, geology and environmental impact problems. These activities opened the way for further, more sophisticated data processing following the launching of LANDSAT 2 Jan. 22, 1975.

Dr. Brockmann, as Director of the LANDSAT-Bolivia Project, formed a multidisciplinary team of scientists in Bolivia to evaluate and apply LANDSAT images. Within a year the team had produced nearly 20 evaluation reports covering geology, volcanology, forestry, hydrology and land use, each demonstrating positive uses for Bolivia. One outgrowth of their work was the publishing of an improved national atlas of Bolivia.

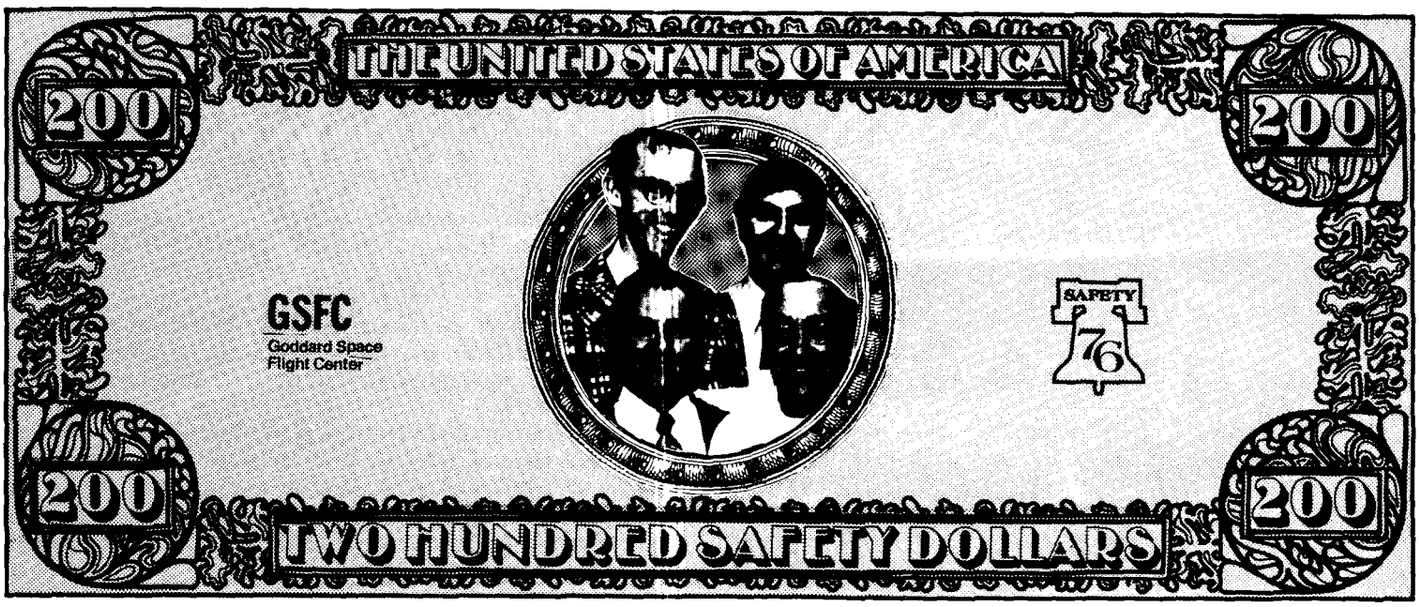
The team's efforts also opened the way for the planning of a gas line from Santa Cruz in Bolivia to the Brazilian border and eventually to Sao Paulo. Several million dollars were saved in developing the route with the use of LANDSAT photographs.

In announcing the selection of Drs. Nordberg and Brockmann for the Pecora Award, NASA Administrator James C. Fletcher, and Interior Secretary Thomas S. Kleppe, said in a joint statement: "The accomplishments of these two eminent scientists exemplify the high ideals to which Dr. Pecora was committed in his scientific pursuits.

"It is altogether fitting that these men be recognized in this manner for the contributions they have made to man's understanding of his natural resources and environment and their relevancy to international betterment."

Drs. Nordberg and Brockmann are the second and third recipients of the Pecora Award. It was first presented July 12, 1974 to William A. Fischer, EROS Senior Scientist with the USGS, during the dedication of the USFS National Center in Reston, Va.

(Continued on Page 4)



ENGINEERING DIRECTORATE "Safety '76" winners cited for outstanding ideas, contributions, and implementation of safety measures shown in sketch are (clockwise) Charles Peruso, Laser Experiments Office, Mission Technology Division; Lawrence Shanahan, Flight Material Supply Specialist, Sounding Rocket Division; Richard Morris, Administrative Officer, Spacecraft Technology Division; and Robert Peterson, Mechanical Integration and Design Branch, Engineering Services Division. Each was a $200.00 award recipient.

IDEAS EARN SAFETY DOLLARS FOR FIVE

Individual creativity, ingenuity and hard work have paid handsome dividends for five Goddard men under the "Safety '76" Award Program recently authorized by Dr. Michael J. Vaccaro, Chairman of the Center's Health and Safety Protection Council.

Andrew J. Mazurick (Code 294), Richard F. Morris (Code 710), Lawrence C. Shanahan (Code 740), Robert H. Peterson (Code 754) and Charles J. Peruso (Code 723) have each received $200.00 cash awards and citations for their individual performance of safety duties.

Mr. Masurick was nominated for his award by POMD Division Chief, Jack Knox, for his series of preventive measures that "collectively demonstrate a key interest in improvements for the sake of safety."

"Dick" Morris' Division Chief, Alton Jones (Code 710) cited him for "his outstanding efforts in the area of development and implementation of safety policies, formulation of standard practices involving issuances of safety equipment within the Division and outstanding performance in conduct of safety inspection and correction of safety deficiencies."

ANDREW J. MAZURICK (Code 294) receives "Safety '76" Award from William A. Mecca, Jr., A&M Director, for outstanding performance of safety duties in locating and improving unsafe conditions. Joyce Eaton, Secretary (Code 230) assists Mr. Mecca with the presentation.

Larry Shanahan of the Sounding Rocket Division prepared a detailed emergency evacuation plan, instructed appointed wardens, conducted inspections and rehearsals; even checked emergency lights and fire extinguishers. As a result, several successful emergency exiting of personnel from Glen Dale Bldgs. I and II were conducted and the Division was subsequently awarded a Zero In Safety Plaque in 1974. Chief Engineer Ed Bissell, in his memo to Division Chief, Jon Busse, summed it all up precisely when he wrote, "the Division credits Mr. Shanahan for all work in the area of health and safety which has resulted in the (above) awards and justification for this nomination."

Bob Peterson's nomination came by way of his Branch Head, G. L. Hempfling, Mechanical Integration and Design (754).

"Mr. Peterson has consistently demonstrated a total awareness for employee and facilities safety," wrote Hempfling, and "not a day goes by that Mr. Peterson doesn't bring up the subject of safety. He at all times has an action item pending with the Health and Safety Engineering Office, and in fact, is depended upon by many occupants to be the unofficial Building 11 safety inspector."

High voltages are what makes lasers work. It is also the characteristic that makes them dangerous. Charlie Peruso is a technician in the Laser Heterodyne Systems Section, Technology Branch (723.1), and responsible for the life test program of the CO_2 laser system housed in the life test station. The CO_2 laser life test station is used for long periods and is frequently unattended. Working parts of the system involve the presence of 12 Kv, not exactly your usual house current.

John McElroy, in his recommendation to Joe Purcell, Director, Eng. Directorate (Code 700), wrote, "Mr. Peruso has designed the test station with great care and consideration for the safety of laboratory personnel. Hazards due to either high voltage or laser radiation are minimized due to his superior implementation, fabrication and operation of that design. His work richly deserves recognition."

NASA COMMUNICATIONS SATELLITE PARTICIPATES IN SEA EMERGENCY OPERATION

The use of NASA's Applications Technology Satellite-6 (ATS-6) to coordinate a long-distance ship emergency operation in the Atlantic Ocean was described at the 1975 IEEE Electronics and Aerospace Systems Conference held in Washington, D.C. during October.

The emergency occurred last March near the Portuguese island of the Azores where staged Search and Rescue (SAR) tests were being conducted as part of an integrated aeronautical/maritime mobile-satellite communications experiment. This experiment is being carried out under the overall supervision of NASA's Goddard Space Flight Center, Greenbelt, Md.

Purpose of the SAR tests were to evaluate use of the ATS-6 for directing an emergency operation of all participating vessels and aircraft over a large area by a U.S. Coast Guard Rescue Coordination Center (RCC) in New York City, thousands of miles from the scene of operations.

A ship not participating in the tests, the Northern Worker, suffered rudder and engine damage during the storm the night before. Its long distance radio equipment also was out of order.

The U.S. Coast Guard Cutter Gallatin, participating in the tests nearby the distressed vessel, radioed the RCC in New York via the ATS-6 satellite. Details of the problem, ship's location, and status were included in the communication. This gave the RCC the required data necessary to proceed with a rescue if necessary.

Upon completion of the three-hour tests, during which the RCC kept a constant vigil on the stricken ship, the Coast Guard vessel escorted the Northern Worker safety to port in the Azores.

For the staged Search and Rescue tests, the German nuclear ship Otto Hahn deposited an emergency Position Indicating Radio Beacon (PIRB) buoy in the ocean. Immediately, the buoy began transmitting the Otto Hahn's call letters on L-Band frequencies, those established for aeronautical and maritime mobile satellite communication. The buoy also generated homing signals for ships and aircraft.

From its station 22,300 miles overhead, the two-ton ATS-6 immediately relayed the buoy's L-Band signals to a NASA ground station at Rosman, N.C. From there, the signals were immediately sent to the Coast Guard's New York rescue center.

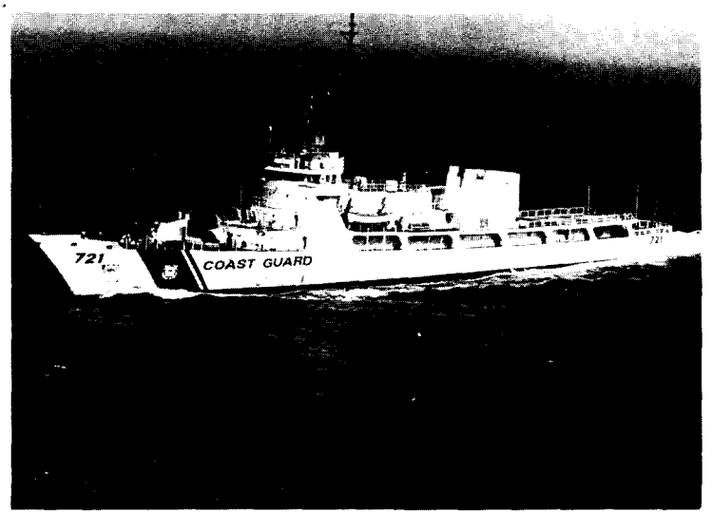
No sooner had the signals erupted from a speaker in the Rescue Center than a Coast Guardsman identified the vessel by its call letters. He then determined its most probable location. Quickly, calls went out over the ATS-6 to the Otto Hahn and the U.S. Coast Guard Cutter Gallatin.

RCC then called the Federal Aviation Agency's Oceanic Air/Traffic Control Center in Atlantic City, N.J. who directed the two nearby aircraft to the rescue scene. Again the ATS-6 was used as a communications relay between the FAA controller and the aircraft.

Within two hours after the first signal was transmitted from the buoy, the two ships and aircraft located and recovered the test buoy.

Dr. William N. Redisch, Chief of the Communications and Navigation Division at Goddard, said, "these tests clearly demonstrated the value of satellites in long distance search and rescue operations outside normal maritime and aeronautical radio range."

Ships and aircraft not in direct line of sight of land must rely on High Frequency radio communications. Such signals are generated over long distances by being bounced back and forth between the Earth's surface and the ionosphere, an electrically charged sheath encircling the globe. Due to its method of relay and atmospheric conditions, High Frequency radio communications often are unreliable.



THE 378-FOOT USCGC GALLATIN radioed distress signals through ATS-6.

Certain Very High Frequencies less affected by atmospheric conditions have been allocated for aeronautical and maritime mobile-satellite communications. These frequencies are designated the L-Band (1.5 to 1.7 gigahertz) involve line-of-sight signals to and from the satellite.

Search and rescue communications tests with the ATS-6 are a continuing part of an L-Band experiment being conducted by NASA's Goddard Space Flight Center, Greenbelt, Md.; the U.S. Departments of Commerce and Transportation, as well as the European Space Agency, and the Canadian Department of Communications and the Ministry of Transport.

BEWARE OF CARELESS-NESS

I am more powerful than the combined armies of the world.

I have destroyed more than all the wars of the nations.

I am more deadly than bullets or missiles, and I have wrecked more homes and jobs than the mightiest siege of guns.

I steal more than five billion dollars each year in the U.S. alone.

I spare no one. I find my victims among the rich and poor alike, among the young and old, the strong and weak, the high-level and low-level workers.

Widows and orphans know me well.

I rise to such proportions that I cast my shadow over every field of labor, professional as well as nonprofessional, from the humblest laborer to the nuclear scientist.

I kill thousands of employees every year.

I lurk in unseen places and do my best work silently.

I am relentless.

I am everywhere on the land and sea and in the air, in the home, on the job, on the streets and highways.

I bring sickness, degradation and death, yet few people make a real effort to avoid me and few take me seriously.

I destroy, crush, maim. I give nothing; I take all.

I am your worst enemy.

I am CARELESSNESS.

124 Satellites in 1974

A satellite was launched somewhere every three days in 1974, according to figures released here by the International Telecommunication Union. Eighteen of the 124 satellites on the list belong wholly or partly to the United States. The Soviet Union's figure is 95.

A handy guide for users of marine radios is Marine Radio Telephone available from the Radio Technical Commission for Marine Services, P.O. Box 19087, Washington, D.C. 20036. Cost: $1.25, and well worth it!

(Continued from Page 1)

Other GSFC Awardees were:

Outstanding Leadership Medal:

Robert N. Lindley (Code 400);
Leslie H. Meredith (Code 100).

Exceptional Scientific Achievement Medal:

Francis J. Lerch (Code 921);
Matthew P. Thekaekara (Code 912).

Exceptional Service Medal:

Charles E. Cote (Code 952);
William B. Dickinson (Code 840);
C. Edward Doll (Code 572);
Victor M. Figueroa (Code 842);
Ellen L. Herring (Code 572);
James A. Jackson (Code 572);
Richard D. Kephart (Code 850);
Carl Knox (Code 801);
John A. Looser (Code 852.1);
Llewellyn W. Nicholson (Code 724);
Gilbert Ousley (Code 702);
Robert C. Taylor (Code 813);
Jerome Teles (Code 572);
Charles H. Vermillion (Code 942);
Eugene W. Willingham, II (Code 572).

Group Achievement Award:

ASTP Computing Support Team,
ASTP Simulation Team,
ATS-6/ASTP Operations Team,
Communications Operations Branch,
Hybrid/Madrid Apollo Stations Team,
SAS Project Team,
Delta Project, for 100 Successful Launches

Equal Employment Opportunity Award:

Dr. Arthur Wolter, Jr. (Code 247).

In addition, on the basis of their service to GSFC and to NASA, the following nominees, employed as indicated, have been selected to receive the referenced awards:

Distinguished Public Service Medal:

Richard B. Kershner, Applied Physics Laboratory, Johns Hopkins University.

Public Service Award:

Richard D. Bolan, Bendix Field Engineering Corporation;
Charles J. Goodman, RCA Service Company;
Luis Gopequi, Instituto Nacional De Tecnica Aerospacial;
Instituto Nacional De Tecnica Aerospacial;
John Stultz, Bendix Field Engineering Corporation;
Hobart E. Wilson, Bendix Field Engineering Corporation.

GODDARD NEWS is published monthly by the Office of Public Affairs at the Goddard Space Flight Center, Mail Code 202, National Aeronautics and Space Administration, Greenbelt, Maryland 20771.

James S. Lacy, Editor
Patricia Ratkewicz, Secretary, Phone Extension 4141

METEOROLOGICAL SPACECRAFT CONTRACT AWARDED RCA

A $45.8 million contract to design and build eight third generation meteorological spacecraft, known as TIROS-N, was recently awarded RCA Astro-Electronics Division of Princeton, New Jersey. TIROS is an acronym meaning Television-Infra-Red-Operational Satellite.

First of the series is scheduled for launch in 1978, an advanced polar-orbiting satellite, TIROS-N will have four times the payload carrying capability of current weather watchers and is expected to make possible weather forecasts two days in advance with accuracy equal to present one-day predictions.

In addition to providing day-night cloud cover imagery, TIROS-N will take atmospheric and sea surface temperature soundings. It will also measure proton, electron and alpha particle activity surrounding earth. As if that weren't enough, TIROS-N will also have the capability to obtain data from balloon-borne and ocean buoy-type weather sensing stations.

TIROS-N will weigh about 1,400 pounds in orbit and will stand 17 feet in height. The present series of weather craft, known as the Improved TIROS Operational System (ITOS), weigh 750 pounds.

Project Manager for TIROS-N is Goodard's Gil Branchflower.

DATA CENTER SUPPORT CONTRACTOR SELECTED

The Center has announced the selection of PMI Facilities Management Corp., of Silver Spring, Maryland, for contract negotiations to provide support services for the National Space Science Data Center (NSSDC).

The cost-plus-award-fee contract is for approximately $3,500,000. The contract is for a period of two years, commencing January 1, 1976, and includes a one-year option provision.

Under terms of the contract PMI Facilities Management Corp., will provide processing, preparation, retrieval, reproduction and distribution of space science data. The contractor will also maintain, upgrade, develop and implement plans for improved data handling information systems. In addition, the contractor will support NSSDC studies by providing scientific analysis and programming, prepare reports, maintain files, order supplies and equipment and operate photographic and microfilm equipment.

The NSSDC is located in Building 26 and serves as a NASA-wide depository for space science data and a means for further analysis and dissemination of this information beyond that provided by the principal investigators. The data is available to scientists, teachers, students and members of the general public. The Center handled over 1,800 requests last year.

100 MILLION BITS ON A BUBBLE?

A $1.5 million contract through Langley Research Center has been awarded The Rockwell Corp., for the development of a solid-state, bubble memory recorder.

The bubble memory recorder has no moving parts and is so constructed that if a fault occurs, the unit will continue to operate at a reduced capacity. The recorder will have a microprocessor controller and be designed to meet a wide variety of spacecraft data storage requirements.

Some of its features include serial or parallel data input-output operation, user-selected data rates and direct access to the memory element level. The unit will have a capacity of about 100 million bits utilizing the bubble domain memory storage elements developed under a previous Langley contract with the Anaheim, California firm. Each of these elements has a storage capacity of 102,400 bits.

The cost-plus-fixed-fee contract covers a period of about two and one-half years.