

Payload team ends year's work on cargo pallet

Plans for OSS-1 unveiled to media

Center Director A. Thomas Young unveiled the Space Shuttle's first operational science payload to the media and NASA Headquarters officials last month as Goddard's payload team neared the of almost a year's work integrating instruments onto a flight-ready cargo pallet.

The payload, designated OSS-1 (Office of Space Science 1), will be carried into orbit in the bay of the Space Shuttle when the vehicle makes its fourth flight in early 1982.

When the Shuttle bay doors are opened in orbit, instruments aboard the pallet will scout the environment around the orbiter as a first step to its use as a routine platform for scientific observations in the coming decades. Other instruments will perform the first measurements of the Sun from the orbiter to demonstrate its use as an operational observatory. Still others will provide in orbit tests of an improved concept in space thermal protection systems, showing the Shuttle's use as a retrievable "proving ground" for engineering designs.

Standing beside the Clean Room of Building 7, where the payload is completing final testing, Director Young introduced the OSS-1 mission to reporters for print and television media, as well Headquarters representatives including Robert F. Allnutt, Associate Deputy Administrator; Dr. Thomas A. Mutch, Associate Administrator for Space Sciences; Andrew J. Stofan, Deputy Associate Administrator for Space Science; Dr. Adrienne F. Timothy, Assistant Associate Administrator for Space Science; Jesse W. Moore, Director, Spacelab Mission Integration Division; Dr. Charles Pellerin, Deputy Director, Spacelab Missions Integration Division; Dr. Robert A.

Continued to page 2



Dr. Werner Neupert (at left) briefs representatives of Headquarters and the press on the first scientific payload to fly on the Space Shuttle. Viewing (at right) are (left to right) Dr. Adrienne Timothy, Assistant Associate Administrator, Office of Space Science; Dr. Thomas A. Mutch, Associate Administrator for Space Science; Robert F. Allnutt, Associate Deputy Administrator; Jesse W. Moore, Solar Terrestrial Division; and Andrew J. Stofan, Deputy Associate Administrator, Space Science.

NASA cuts energy consumption

NASA has cut energy consumption by substantially more than required under the President's Five Percent and Ten Percent Energy Reduction Program, according to E. C. Kilgore, Associate Administrator for Management Operations.

Kilgore said NASA achieved a reduction of seven percent in total energy versus the goal of five percent, and a reduction of 11.2 percent in automotive gasoline versus the goal of ten percent.

Goddard Space Flight Center helped reach this goal by achieving a 17 percent reduction in automotive fuel, said Kilgore. The reduction in

total energy, however, was only four percent, falling short of the five percent goal.

"We must now look ahead to achieving the Agency's goal of 50 percent reduction in utilities energy by FY 1985," said Kilgore. At the end of FY 1979, we were down 37 percent, he said. Predictions indicate that we should pass through the 40 percent reduction level by the end of FY 1981.

"The last 10 to 12 percent increment will be the most difficult to achieve," Kilgore added, "so we must maintain the current momentum and dedication."

OSS

Continued from page 1

Kennedy, Branch Chief, Spacelab Science Missions; and William R. Witt, Jr. Program Manager, OSS-1.

Following the Director's introduction, Goddard's Jon Busse, Project Manager for SPIRE (Shuttle Payloads Integration and Rocket Experiments), described experiments aboard the pallet, then invited visitors into the Clean Room to view the payload firsthand. There Dr. Werner Neupert, OSS-1 Mission Scientist, reviewed scientific objectives of the experiments and Ken Kissin, OSS-1 Mission Manager, explained those systems and efforts required to support the investigations.

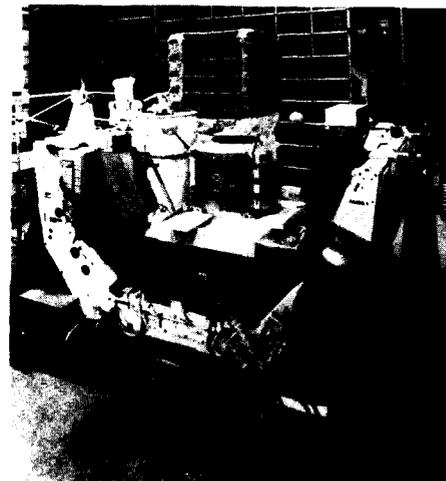
One of the principal objectives of the OSS-1 mission will be to establish levels for the electromagnetic conditions around the Shuttle orbiter that might affect measurements by instruments making observations from the vehicle.

As with any spacecraft, the orbiter will perturb the normal electromagnetic environment of space. One cause of disturbance will be particle and radiative emissions from the spacecraft's materials, contamination which will be measured on all early Shuttle flights by an Induced Environment Contamination Monitor developed at the Marshall Space Flight Center. Other disruptions, to be investigated by the OSS-1 mission, are emanations from currents flowing through the orbiter structure radio transmitters, etc., and the bowshock and wake created by the Shuttle moving like a large ship through the surrounding space plasma of charged particles. To measure the levels of these disturbances of the normal environment, OSS-1 carries a Plasma Diagnostics Package (PDP) supplied by the University of Iowa. Shaped as a meter high drum, the Package can take measurements in place aboard the pallet, and be carried off the pallet on the end of the orbiter's crane-like Remote Manipulator System to study conditions at a distance of up to 15 meters.

Orbiting space vehicles are also likely to accumulate electrical charges, which at very high orbits have been observed to cause the vehicle's electric potential to deviate many hundreds of volts from its surroundings. While such strong effects are rarely observed for near-earth satellites, the Shuttle orbiter varies sufficient-

ly in size and construction from traditional spacecraft to warrant study of its charging properties (for example, unlike other satellites, 90 percent of the orbiter's surface is covered with low conductivity tiles or ceramic felt). To measure charge accumulations due to the orbiter moving through the ionosphere, the Utah State University is flying a Vehicle Charging and Potential experiment aboard OSS-1). In addition to passive measurement points, the experiment includes a low-power (100 watt) electron gun that will be used to actively change the potential of the orbiter to observe how quickly it returns to its original state. The experimenters also plan to use the gun in conjunction with mapping of the environment about the orbiter by the outstretched PDP to observe how the electron beam as interacts with the Earth's magnetic field.

Yet another environmental hazard to accurate observations in space is the possibility that the vehicle's firing of thrusters, water dumps and outgasings will create a local "cloud" in the sky which will interfere with the viewing of astronomical objects. To assess such contamination and its decay rate, the State University of New York at Albany has

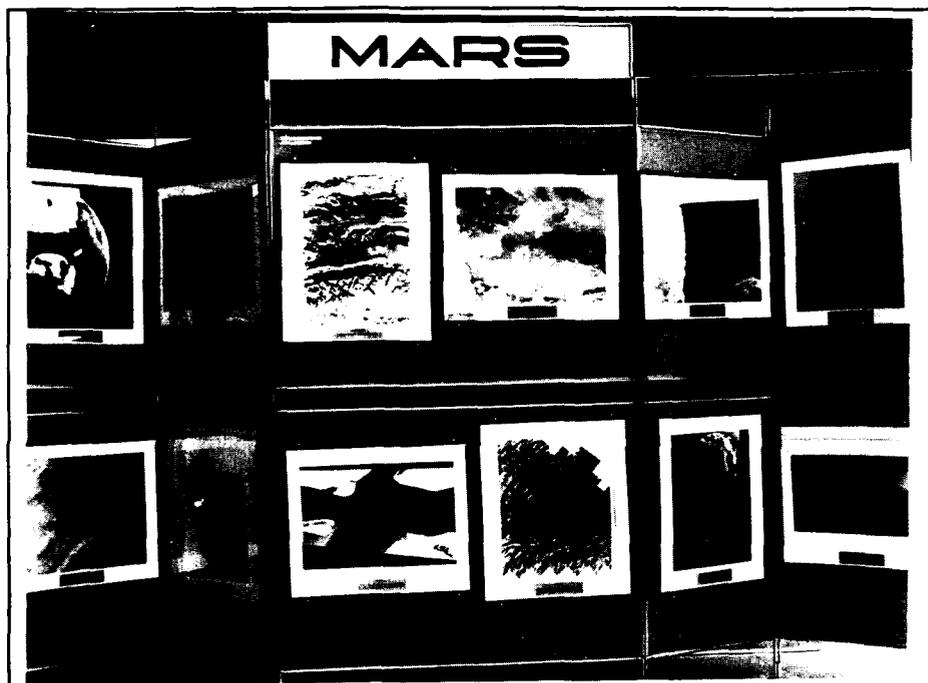


The OSS-1 mission pallet with experiments mounted.

contributed an Induced Atmosphere Experiment to OSS-1.

While pioneering the Shuttle environment for future scientific experiments, OSS-1 will also carry operational experiment packages of its own. The Induced Atmosphere Experiment, for example, will not only study how contamination dims light from distant stars, it will also examine the composition of interplanetary dust clouds by their reflection of sunlight.

Continued to page 4



There is at present a selection of colorful photographs of Mars on exhibit in the Goddard Library. The photographs will be on display until late August, when they will be changed for a display of photographs of Jupiter. Periodic picture changes are expected to follow, culminating in a showing of the Saturn photographs to be taken by Voyager 1 late this year. The Library exhibits are designed and prepared by the Presentations Section for Goddard's Public Affairs Office.

People

Co-op Coordinator Kathleen Hipkins leaves Goddard

Kathleen Hipkins, cooperative education coordinator, will be leaving GSFC this month. Mrs. Hipkins has been recruiting and hiring co-op students for the past three years.

As a former co-op herself, Kathleen is dedicated to the concept of work experience with education. Though her cooperative education was in Code 700 as a computer programmer, she came permanently on board as a co-op coordinator in Code 224.

Her ability to change career fields is one of the major advantages of the co-op program, she said. After working as a programmer, Kathleen realized that her personality was more suited for a "people oriented" job. She was so excited about her own co-op experience that when assured she was qualified for the position of co-op coordinator, she readily applied for the job, she said.

Judging by Kathleen's enthusiasm, the job was even more fulfilling than she imagined. During her three years here, she made many changes to improve the program. To better meet the co-op needs of individual directorates and divisions, she restructured the paperwork procedures to make the process more direct and therefore more efficient.

She also has been part of the effort to encourage graduate level co-op students and high school pre-co-ops.

From her own experience as a co-op, she recognized that certain social aspects of college life are sacrificed during co-op work periods. To alleviate this problem somewhat, Kathleen organized co-op luncheons so that the students could become friendly with each other.

She also gave students the option of rotating job assignments so that they could better decide in which type of work they are most interested.

Under Kathleen's auspices, the number of colleges and universities participating in the co-op program has more than doubled from about 18 to 40 total. Moreover, the number of co-op slots will be increased by 10 this fall.

Continued to page 4

New Employees

Bredenkamp, Joseph H. Jr., Supervisory Mathematician (Code 603), 07-13-80.
 Jackson, Arthus H., Electronics Engineer (Code 861.3), 07-13-80.
 Ando, Ken J., Physicist (Code 941), 07-27-80.
 Jenkins, Eric S., Engineering Aid (Code 752.1), 07-27-80.
 Knapp, Deborah L., Mathematician (Code 801), 07-27-80.
 Letourneau, Joseph H., Safety and Fire Engineer (Code 205), 07-27-80.
 Rao, Desiraju B., Supervisory Physical Scientist (Code 912), 07-27-80.
 Rowland, Norma J., Contract Specialist (Code 269), 07-27-80.
 Spencer, Ronald P., Engineering Aid (Code 752.1), 07-27-80.
 Williams, Christine R., Administrative Assistant (Code 900), 07-27-80.

Tesch appointed Chief Counsel, GSFC

After twelve years of service at NASA headquarters, Gary L. Tesch is now Chief Counsel for the Goddard Space Flight Center, taking the place of Charles M. Kearney who retired in March.

As the chief legal advisor to the center director, Tesch is involved in every facet of Center activity having legal implications. This position covers a broad spectrum of legal activities from labor relations to procurement matters.

"I like to think of myself as chief counsel to all 3,400 Center employees," Tesch said.

While at headquarters, Tesch served as a senior procurement attorney in the Office of the General Counsel, and was a counsel for University Affairs, the Headquarters Contracts Division and the NASA Contract Adjustment Board.

An Oklahoma native, Gary Tesch is a 1958 University of Oklahoma graduate, and earned his law degree from the University of San Francisco Law School. He belongs to the State Bar of California.

His career has taken him from special agent for the FBI to attorney-advisor for the Defense Fuel Supply Center, along with a six year stint with the Marine Corps Reserve.



Goddard mourns William Watson

William Wirth Watson, who retired from NASA's Goddard Space Flight Center in February, died July 30 after a short illness at his home in Catonsville, Md.

Watson, 62, had been employed by the space agency for 20 years. A radio and TV specialist, he was known as the "voice of Goddard."

He earlier did public relations work for the Maryland Petroleum Corporation, the United Appeal, and the Tidewater Fisheries Commission.

He was a pioneer in Baltimore television, serving as weatherman for what was then WAAM-TV, now WJZ-TV. In addition, he was host of hunting and fishing discussion shows on WAAM and on WBAL-TV.

He was also a founder of a conservation group, the Chesapeake School of Marine Ecology.

Born in Catonsville, he graduated from Catonsville High School in 1936 and from the University of Maryland in 1941.

During World War II, he reached the rank of lieutenant commander in the Navy while serving as a bomber pilot.

Fond of golf, he was a member of the Rolling Road Country Club.

He is survived by his wife, the former Gloria Smith; two daughters, Fran Smith Bolster, of Annapolis, and Patricia Watson Bartlett, of Catonsville; a son, William W. Watson, III, of Arbutus; and four grandchildren.

OSS

Continued from page 2

Two experiments in solar physics are also aboard the pallet: a Solar Flare X-Ray Polarimeter from Columbia University which will study the physical processes associated with solar flares, and a Solar Ultraviolet Spectral Irradiance Monitor supplied by the Naval Research Laboratory to study variability in the Sun's output of ultraviolet radiation that affects the Earth's atmosphere and climate. Because the instruments will be the first of their type to be returned to Earth following use in space, they will also permit scientists to study how space conditions may change instruments' sensitivity and hence the accuracy of their observations.

The OSS-1 pallet also will carry a Goddard developed Thermal Canister Experiment to test space applications of a new kind of container which one day may provide a thermally controlled environment for a wide variety of instruments making observations from the orbiter's open cargo bay. While in the past experiments in space have generally required tailor-made thermal packages to protect them from dramatic differences in temperatures on sunlit and shaded sides, engineers have recently sought to develop more economical, standardized packages that could compensate heat from one side for cold on the other to provide desirable constant internal temperatures. The Thermal Canister Experiment will test one promising technique for such heat transfer: heat pipe technology that has already proved successful in a wide variety of uses on Earth and space.

A final experiment flying on the OSS-1 mission but not attached to the pallet will be the first to use the orbiter as a laboratory for studying life sciences. To be carried in one of the stowage lockers in the orbiter's manned cabin area, the

experiment will seek to determine whether plants freed of gravity will continue to grow a natural stiffening agent, lignin, which gives them vertical support on Earth. Agriculturalists are interested in possibly findings ways to control development of lignin in plants because the substance, which comprises about 30 percent of woody plant tissue, diverts a major portion of a plant's growth from the development of nutritionally valuable proteins, fats and carbohydrates to development of nutritionally valueless support structures.

Integration of the OSS-1 mission experiments began at Goddard in late 1979 when the European Space Agency

(ESA)—built pallet arrived by truck from the Kennedy Space Center. The OSS-1 effort has been and will remain in the hands of the same team at Goddard through the mission: from the mounting of Goddard developed avionics aboard the pallet to final placement of protective thermal blankets over all exposed instruments, and from test to flight operations. Principal members of the Goddard OSS-1 team, in addition to those already mentioned, include Ted Goldsmith, Frank Volpe, Marty Eiband, Jim Kunst, Bill Hoggard, Tom Long, Diane Williams, and their respective staffs and co-workers. Important contributions came from Code 750 and others.



Author James Michener visits Goddard

James Michener, noted author and space enthusiast, chats with Dr. Albert Boggess, I.U.E. Project Scientist, during his July 22 visit to Goddard. At the Center, Michener met with Director A. Thomas Young; R. E. Smylie, Associate Director, Space Tracking and Data Systems (H.Q.); and Richard Sade, Networks Director, who briefed him on the tracking network and NASA stations in Australia. Michener plans to visit the Australian stations as a part of his trip to the New Hebrides Islands, where he will be representative of President Carter. Michener is the author of such books as *Tales of the South Pacific* and *Chesapeake*.

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Pictures: Photographic Section

Hipkins

Continued from page 3

Mrs. Hipkins described her time at Goddard as challenging and satisfying. She said she now can go back to her hometown of Powaton, Virginia, with a sense of pride and accomplishment in her work as the cooperative education coordinator at GSFC.