

NASA News

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FIRST SHUTTLE PAYLOAD TO INVESTIGATE EARTH RESOURCES

The first payload to be carried into space by the Space Shuttle will carry out investigations in Earth resources, environmental quality and severe storm research in 1979.

The payload, under the management of the NASA Headquarters Office of Applications, will be on the second Orbital Flight Test (OFT-2) scheduled for launch from the Kennedy Space Center, Fla. Space Shuttle Orbiter 102, sister ship to the "Enterprise" now undergoing approach and landing tests at NASA's Dryden Flight Research Center, Calif., will make the first several Shuttle space flights.

The orbital flight test program is a series of six developmental missions in 1979 and 1980 leading up to operational readiness of the Space Shuttle in May 1980.

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PAYLOAD TO INVESTIGATE EARTH RESOURCES
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Objective of the OFT missions is to evaluate the performance of the Space Shuttle and its systems and to provide early demonstrations of the Shuttle's capability to do what it is designed to do in space.

The first orbital Shuttle mission (OFT-1) will carry instrumentation to evaluate its performance and also will carry a special package called the Induced Environment Contamination Monitor (IECM) to measure the effects of the Shuttle on the space immediately around it. The IECM will be carried on all six orbital flight test missions.

The payload carried on the second Shuttle flight, like the Shuttle Orbiter itself, is reusable. This will permit adjustment and modification of the payload instruments and other hardware to allow its use on subsequent flights at relatively low cost.

The first Shuttle payload investigations and the principal investigators as currently assigned are:

- All-Weather Surface Observation Investigation--

Principal Investigator - Dr. Charles Elachi,
NASA Jet Propulsion Laboratory, Pasadena, Calif.

For several years NASA research spacecraft have acquired data about Earth resources using space sensors that see in the visible and near infrared portions of the electromagnetic spectrum. This investigation will extend these observations into the microwave portion of the spectrum.

Using an active microwave system (radar), this investigation will add a valuable new dimension to the earlier data and also allow observations through cloud cover. This information will be particularly important to mineral exploration and to areas where clouds are present a high percentage of the time. This investigation is also the start of a program to determine the optimum design for active microwave sensors.

- Measurement of Air Pollution from Satellites--
Principal Investigator - Dr. Henry G. Reichle, Jr.,
NASA Langley Research Center, Hampton, Va.

This investigation will measure the amount and circulation of carbon monoxide in the middle and upper troposphere. This will be the first measurement from space of pollutants in the lower atmospheric levels. As such, this investigation is an important step toward measuring and monitoring global pollution where it most directly affects people and communities on Earth.

- Shuttle Multispectral Infrared Radiometer--
Principal Investigator - Dr. Alexander F. H. Goetz,
NASA Jet Propulsion Laboratory

This investigation will use a special instrument to provide for testing of various combinations of spectral bands and bandwidths in the near-infrared portion of the spectrum. This allows continued research to optimize infrared sensor systems for future Earth resources satellites. On the OFT-2 mission, this instrument will test spectral bands not now used by the Landsat Earth resources satellite but which appear to have important applications to mineral and oil and gas exploration.

- Ocean Color Experiment --
Principal Investigator - Mr. Hongsuk H. Kim,
NASA Goddard Space Flight Center, Greenbelt, Md.

The bioproductivity of the oceans is an important indicator of the biological health of our planet and the impact of man's activities. It is also of direct interest to commercial fisheries for locating and evaluating fishing areas. This investigation will attempt to get bioproductivity data by measuring variations in water color in the open oceans. These variations are expected to identify concentrations of chlorophyll as an indication of the presence of plankton and algae.

Such concentrations are feeding grounds for many commercially sought fish.

- Nighttime and Daytime Optical Survey of Thunderstorm Lightning and Convective Behavior --
Principal Investigator - Dr. Bernard Vonnegut,
State University of New York at Albany

This investigation will examine the correlation between lightning and various types of severe storms. A standard 16mm movie camera will be used, equipped with a photocell attachment that records lightning flashes as signals on the sound track of the film. This is expected to reveal details of convective circulation in storms and their relationship to the character, location and extent of associated lightning discharges. It is hoped that this data will lead to the development of satellite systems that can identify severe storms day or night.