Aerospace Notes

OBSERVATION

Spacecraft befoul own instruments

Spacecraft in orbit may befoul their own instruments, according to two engineers from the Martin-Marietta Corp.

Cabin leaks, waste dumping, exhaust from attitude control systems, even evaporation of spacecraft materials such as paint and plastic cut the efficiency of instrument lenses and mirrors, reported Joseph A. Muscari and Arthur C. Cunningham at the Optical Society of America meeting in Detroit.

In experiments aboard Gemini 12 last November, lenses of quartz and crown glass, and mirrors of aluminum, exposed outside the craft for varying periods, showed little deterioration of transmission of visible and infrared light. In the ultraviolet spectrum, however, transmission was cut nine percent in 23 hours of exposure, and 25 percent after 43 hours.

The contamination did not seem to come from rocket exhaust during the powered phase of the flight, the engineers reported. Samples exposed for the first part of the flight and then taken inside showed no more fogging than those placed outside in space after the launch phase was completed.

MATERIALS TESTING

First commercial boron flight tests

The first commercial application and test of a boron composite for air frames has been approved by the Federal Aviation Agency's engineering-manufacturing division.

The material, which consists of tiny, thread-like boron filaments embedded in an epoxy base, will replace an existing part on the leading wing edge of a Lockheed 200, commercial version of the Air Force C-141 Starlifter. Previously, boron composites had been approved for test only on two military aircraft, the F-111 jet fighter and the not-yet-completed C-5A subsonic transport.

Lockheed-Georgia Co., in Marietta, Ga., has begun test flights with the new material, which is desired for its light weight, stiffness and corrosion resistance. Techniques of forming and machining boron composites are still to be developed, however, and the company predicts that production applications are at least five years in the future.

MOONCRAFT

Orbiters 2 and 3 downed

Lunar Orbiters 2 and 3 have been deliberately crashed into the moon, leaving two more Orbiters still circling around it.

The spacecraft were crashed because they were running out of maneuvering gas, and the space agency did not want them to become uncontrollable while still in orbit. In addition, the radio frequencies on which they beamed their pictures back to earth were taking up space on the communications band.

Orbiter 2, launched in August 1966, was crashed on Oct. 11. Orbiter 3, launched last February, was sent down two days before its predecessor. Still in orbit are Orbiters 4 and 5, launched in May and August.

SAFETY

Net to halt runaway airliners

A gigantic emergency arresting gear system, capable of stopping the largest four-engined jet aircraft without discomfort to passengers, is being developed for the French Ministry of Transportation.

The system consists of a nylon net made by the Aerazur Co. of France, which engages the aircraft for the full width of its wing span. Net and airplane are brought to a slow stop by energy absorbing devices located along the sides of the runway. The control tower operator can trigger the equipment that stretches the net across the runway.

For the tests, being held at All American Engineering Co. in Georgetown, Del., a full-scale frame simulating a Boeing 707 jet will be propelled into the net by an Federal Aviation Agency high-speed catapult. All American is developing the energy absorbers under contract to the French Government.

SPACE SIMULATION

Super-vacuum traps molecules

A double vacuum chamber which simulates the airlessness of space in order to measure the molecules given off by spacecraft and other objects has been developed at the California Institute of Technology's Jet Propulsion Laboratory.

Called a Molsink chamber—short for molecular sink—the vacuum-within-a-vacuum device captures the tiniest gas molecules by freezing them on the walls of the inner chamber at temperatures of minus 400 degrees F. It is rated as capable of capturing 99.97 percent of all condensable molecules emanating from an object under test, compared with conventional vacuum chambers which are generally able to capture less than half of them.

Cooled by helium gas, the Molsink is instrumented to measure differences as fine as one-hundreth the thickness of a single layer of water molecules. The device was designed by James B. Stephens of JPL.

COMBAT

USAF gets armor for Vietnam

Air Force crewmen flying in Southeast Asia are wearing a new type of body armor and special helmets as protection against enemy ground fire.

The armor, which covers the back and chest, is made of a ceramic material backed with nylon to prevent pieces from flying off if struck by small arms fragments. Developed by the Air Force Systems Command at Wright-Patterson AFB, Ohio, the armor is now being evaluated at the AFSC's Aerospace Medical Division at Brooks AFB, Tex., to further mold the equipment to a man's body and make it thinner and lighter in less critical areas.

Work is also underway to develop armor to protect the neck, sides, shoulders and lower torso.