

RELIABILITY

Loose wire caused Intelsat downfall

The destruction of the first Intelsat 3 satellite during its launch last Sept. 18 has been blamed on a loose wire.

About 20 seconds after the satellite's Delta launch vehicle lifted off the pad at Cape Kennedy, telemetry signals indicated the beginnings of intermittent vibrations in the booster's pitch axis. The shaking got worse and worse, until, 102 seconds after launch, the vehicle's first stage finally shook itself apart. The range safety officer destroyed the remaining two stages.

A committee formed to review the failure has concluded that the most probable cause of the fatal vibrations was a loose wire in part of the booster's guidance system, which caused the system to receive intermittent information about the rate at which the booster was moving in pitch. The system thus made erratic compensations to correct for the movements, causing the vibration.

This finding was made possible by the recovery from the wreckage of the guidance system's rate gyro distribution box. But the investigators say the possibility of a failure in some unrecovered part cannot be ruled out.

Additional pre-launch tests and inspections, as well as new manufacturing techniques, added since the mishap, have resulted in eight out of eight successful Delta launches—including a replacement for Intelsat 3.

PERSONNEL

Shepard back in lineup

America's first astronaut, Alan B. Shepard Jr., has been restored to full flight status after having been grounded by an ear infection six years ago.

Shepard, then a Navy commander and now a captain, rode his Mercury spacecraft, "Freedom 7," on a 15-minute 22-second suborbital flight on May 5, 1961. In 1963, however, vestibular difficulties stemming from an ear infection caused him to be removed from flight status.

In February, Shepard underwent surgery, and examination by National Aeronautics and Space Administration physicians found his condition flightworthy. At age 45, Shepard is the oldest astronaut currently on the flight roster.

LOGISTICS

Astronauts are weaned

The days when an astronaut must suck his food from a feeding tube like an infant from a bottle are on their way out.

The feeding-tube technique, developed first because of uncertainties about eating in weightlessness, then retained to prevent food particles from floating loose in spacecraft cabins, has come under recent reexamination with planning for longer-term space flights.

As part of making space food generally more palatable, Whirlpool Corporation's life-support department has developed a "spoon-bowl" package, introduced on Apollo 10. In place of the feeding tube is a wider opening, which opens and closes with a pressure-type plastic zipper.

The package is used with foods that must be reconstituted with water. The astronaut adds hot water to the package, cuts off the seal, pulls open the zipper and eats his meal with a spoon. He must still be careful, however, to hold the package close to his mouth and keep the spoon very steady while eating.

POLICY

Spaceman gets council post

Astronaut William A. Anders, one of the crew of the Apollo 8 moon-orbiting flight, has been named the new executive secretary of the National Aeronautics and Space Council.

Anders will fill the vacancy left when President Richard Nixon accepted the resignation of Dr. Edward C. Welsh. The council, headed by the Vice President, is charged with advising the President on space and aeronautics plans, policies and programs. Its other members are the Secretary of State, Secretary of Defense, the Administrator of NASA and the Chairman of the Atomic Energy Commission.

Anders will not assume the post until July, however, because he is in the backup crew for Apollo 11.

PLANETARY EXPLORATION

Mars rocket in the works

A rocket engine that could be the forerunner to one that will power the first search for life on the surface of Mars is being developed for Jet Propulsion Laboratory by TRW systems group in California.

The expressed role of the 600-pound-thrust engine's development is merely to explore technology in the 500-to-1,000-pound thrust range. However, the Viking program (which is to soft-land a package on Mars in 1973) is mentioned as a related application; also, the announcement of the contract, though not pertaining to a direct NASA award, had to be approved by the space agency's Langley Research Center, focus of Viking development.

The engine's thrust is 50 percent greater than the Viking landing capsule's anticipated weight of 400 pounds. It will be a throttable engine, as are those used in Surveyor and the Apollo lunar module descent stage, probably with a five-to-one thrust range. It is expected to be capable of at least 10 starts, with a total burn time of 500 seconds.

TROUBLESHOOTING

Apollo 14 will be guinea pig

The Apollo 14 spacecraft has been assigned the job of trouble-shooter, to be used in helping to track down any problems encountered during the Apollo 10 and 11 moon missions.

Apollo 11 and 12 are both already at Cape Kennedy, and Apollo 13 is in its final checkout at North American Rockwell's space division in Downey, Calif., for delivery in June. Apollo 14 is thus the first one available on which engineers in Downey can try to reproduce, on the ground, difficulties encountered in flight.

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