aerospace notes

AIR SAFETY

Shock absorbers for flight

While researchers around the country struggle to find ways of spotting invisible Clear Air Turbulence, scientists at Texas A&M University are looking for ways to help aircraft resist the jolts of CAT once they have flown into it.

There have been many studies to measure the turbulence itself, as well as its effects on an airplane's behavior, says Dr. Richard E. Thomas, head of the project's flight program. But, he says, none have tried to analyze the detailed changes in the pattern of air flowing over the wing.

There are not even good theories to describe such changes, he adds, so the program's first step will be a theoretical analysis of the problem it is intended to investigate. Next will come scale model tests in the university's seven-by-ten-foot wind tunnel, equipped with an array of air nozzles to simulate gusts, followed by actual flight tests.

"We think it is feasible to develop a system to enable the airplane to fly through turbulence with minimal response to it," Dr. Thomas says. Such a system might include rows of slots along the wing, which would open automatically in response to an upward gust, ducting down high-pressure air to compensate for it.

SAFETY

Space plastics to fight fire

The space agency is studying the possibility of forming spacecraft components from materials containing millions of tiny capsules of fire-retardant liquid.

Under a contract from the space agency's Ames Research Center in California, the National Cash Register Co. in Dayton, Ohio, is trying out different suppressants by micro-encapsulating them in the little spheres, which together have the physical properties of a powder and could be included as a component of plastic structural materials.

Heat from a fire would melt the capsule walls, releasing the fire suppressant and damping the fire almost as soon as it started. NCR is also investigating the use of micro-encapsulated suppressants in paint-like coatings and sprayed-on foams.

COMMUNICATIONS SATELLITES

TV from space studied for India

A plan to launch a television-broadcast satellite for India in 1972 is now being studied by the executive board of UNESCO.

Programs transmitted through the satellite would be distributed to an estimated 50,000 receivers (yet to be provided) via ground stations at Delhi, Bombay, Calcutta, Madras, Ahmedabad and Cawnpore. Cost of the program has been estimated at $50 million, of which $10 million would be for the satellite, a similar amount for the receivers and the rest for research, development, launching and ground support.

The United Nations agency recommends that by early next year the detailed plan and personnel training program should be worked out, with recruitment, establishment of ground stations and installation of the receivers to be completed two years later.

An experimental ground station has already been set up at Ahmedabad as a training center, though there is no communications satellite in the vicinity to enable a full program. The space agency's ATS-2 satellite, launched April 5, 1967, would have been usable, but a booster malfunction placed it in the wrong orbit.

A second ground terminal is to be built next year east of Bombay, however, which should have access to the Communications Satellite Corp.'s Intelsat III, now scheduled for launch next April, six months before the planned completion of the ground station. Intelsat III is to be stationed over the Indian Ocean.

METEOROLOGY

Atlantic APT stations join WEFAX net

In an experiment that will cover four continents, ground stations now used to pick up cloud cover photos from satellites passing overhead will be adapted to receive charts, maps and photos from the United States weather facsimile system or WEFAX.

By simply changing a crystal to alter the frequency of the inexpensive Automatic Picture Transmission stations, more than 150 users in 30 countries in North and South America, Africa and Western Europe will be able to obtain WEFAX data. It will be transmitted from the Environmental Science Services Administration in Suitland, Md., by landline to the space agency's ground station at Mojave, Calif., then transmitted up for final relay by the ATS-3 synchronous satellite, stationed 22,289 miles above northern Brazil.

The WEFAX data will be reproduced by facsimile equipment that is already part of the transmission stations.

ATMOSPHERIC PHYSICS

Densest satellite launched

The heaviest satellite for its size ever launched has been orbited by the Air Force's Cambridge, Mass., Research Laboratory to help improve predictions of missile trajectories and spacecraft splashdowns.

The spherical satellite, only 23 inches in diameter, weighs 600 pounds, giving it a density of 162 pounds per cubic foot. Its high mass and limited area, says the Air Force, reduce the decelerating effect of atmospheric drag, so that the low-altitude satellite can stay in orbit for a useful period of time. The satellite's perigee is less than 97 miles, but it is expected to remain aloft for about 40 days from its July 11 launch date.

Known only as OV-116, the satellite carries three accelerometers, each measuring deceleration along a different axis. The data will be used to produce a continuous density profile of the atmosphere, which can also be expanded to include pressure and temperature.

A previous satellite, weighing 1,000 pounds, was built with a lead casing. Engineers found out, however, that it was too heavy to be launched on the planned Atlas booster, since a second satellite (a conventional multi-experiment probe) was already committed to sharing the ride. That second probe is also in orbit and working.