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AERONAUTICS

SST May Cost Too Much

Flight in supersonic transports cruising about 70,000 feet may not attract enough passengers to be commercially profitable

► THE SUPERSONIC TRANSPORT (SST), a prize now being bitterly contested by two aircraft manufacturers, may well be an economic flop, a professor of aerospace engineering believes.

Premium fares, public fear of cosmic rays and the "probably doubtful" initial SST safety record may outweigh the advantages of such high-speed transportation, reported Dr. Kurt Hohenemser of Washington University, St. Louis.

The Federal Aviation Agency is maintaining an unprecedented amount of control over the SST's development. Thus the Federal Government is best equipped to weigh the good and the bad and establish "a rational balance between benefits and cost."

However, Dr. Hohenemser said in Scientist and Citizen, June 1966, ". . . such a balance sheet, if it has been prepared, has not been made public."

Most of the SST's supersonic flight will be at about 70,000 feet, where "the dose rate from cosmic radiation reaches a maximum."

Cosmic radiation will probably expose travelers to dosages of about two

millirems per hour, the scientist said. This would produce in 250 hours the "recommended maximum yearly dose" listed by the International Commission on Radiological Protection. Few passengers would be likely to accumulate this much flying time, but flight crews could do so as a result of repeated scheduled runs.

All occupants of a plane, however, could receive an entire year's dosage if the flight took place during a "solar particle event"—a sudden burst of high-energy particles from the sun, bathing the earth with excess cosmic radiation.

SST ticket sales will have to compete not only with today's jetliners, but with a new generation of "barnliners," including the 470-passenger Boeing 747 and the Lockheed L-500, which could be equipped to carry as many as 900 people. Such aircraft will offer air travelers a vast fare differential, in exchange for speed.

In addition to radiation, fares and safety, the plane could also be the object of sonic boom complaints. Political pressure to close certain routes to the SST could curtail its use.

• Science News, 89:462 June 11, 1966

CHEMISTRY

Bromides Inhibit Flames

► COMPOUNDS containing bromine may be more effective than those containing chlorine for use in fire extinguishers.

Various hydrocarbons containing halogens—bromine, chlorine and fluorine—have long been used for extinguishing unwanted fires, but the relative effectiveness of the different compounds has not been up to now definitely known.

Carl Halpern of the Institute for Applied Technology, National Bureau of Standards, Washington, D.C., reported in Physics and Chemistry, 70A:133, Mar.-Apr. 1966, that the effects of five halogenated hydrocarbons on the flame speeds were compared in order to rank them in order of effectiveness. Methane flame was used for these tests.

The compounds, bromotrifluoromethane, dibromodifluoromethane methyl chloride, chlorotrifluoromethane and dichlorofluoromethane were put through a special apparatus for measuring flame speeds by Mr. Halpern.

The apparatus used consists of drying and metering sections for air and fuel and a nozzle that serves as the burner, while instruments measure and control the temperature of the burning mixture.

Photographs of the flame reacting to the various halogenated hydrocarbons were made to obtain measurements of the extent of inhibition. Although the measurements are not precise, they established relative magnitudes and indicate trends, he said.

Mr. Halpern reported that all the inhibitors tested were found to be much more effective in reducing flame speeds when used in greater concentrations and the maximum flame speeds are reduced proportionately to the amount of inhibitor added.

Mr. Halpern reported that his findings indicate that among the inhibitors used, the bromides reduced the flame speed of methane the most and of these, dibromodifluoromethane (CF₂Br₂) was the most effective.

• Science News, 89:462 June 11, 1966