

AIR TRANSPORT

STOL as a breakthrough

Door-to-door trip times in the 100-to-400-mile range have not improved in 20 years, despite the advent of helicopters and ever-faster jetliners, according to a commercial aviation industry researcher. The solution, he says, lies in STOL aircraft.

Helicopters are uneconomical over 100-to-400-mile distances, says Richard D. FitzSimmons, director of product research for the Boeing Co.'s Commercial Airplane Group. On the other hand, he says, high-speed jets face congestion at today's large, centralized airports.

The alternative, FitzSimmons believes, is commercial STOL aircraft using direct-lift engines—either jets or fans—which could be operational by 1975. "We believe that a commercial STOL program is not too far away," says FitzSimmons, despite the recent closing of Washington Airlines (SN: 10/4, p. 302).

LUNAR EXPLORATION

Apollo rover near the starting point

The National Aeronautics and Space Administration is almost ready to select a builder for a manned lunar roving vehicle, to let astronauts increase their exploration range on the moon's surface.

By the end of this month, NASA officials hope to have selected either the Bendix Corp. in Ann Arbor, Mich., or the Aerospace Group of the Boeing Co. in Huntsville, Ala., to design and build four of the vehicles, plus several ground test models. On Sept. 30, NASA narrowed the competing companies down from a group of four that included the Grumman Corp., Bethpage, N.Y., and Chrysler Corp., New Orleans, La.

The lunar rover is to weigh only 400 pounds, with silver-zinc batteries giving it a maximum range of more than 70 miles, although astronauts are likely to be restricted to a three-mile radius from the lunar module—the distance they can walk back if necessary. The two-man car, to be about 10 feet long, is planned for delivery in early 1971, to go to the moon beginning with Apollo 17 that September.

Meanwhile, Grumman and Bendix are also competing to do the preliminary design of the manned rover's successor, a dual-mode vehicle that could be operated either by men or from earth by remote control. A winner should be chosen late this year.

SATELLITE COMMUNICATIONS

Ground stations for Iran, Indonesia

Iran and Indonesia are the two latest countries to acquire a capability for satellite communications; each has just received its first ground station.

The Iranian station was built by Page Communications Engineers, Washington, for the Iranian Ministry of Post, Telegraph and Telephone. Dedicated on Oct. 5, the station is located near Hamadan in western Iran.

The Indonesian station, which opened Sept. 29, follows two years of negotiations, made all the more complicated by the fact that the project was one of the

first foreign investments to be undertaken since the economy was opened up following President Sukarno's overthrow in 1966. Built by International Telephone and Telegraph Corp., the facility is located about 60 miles from the Indonesian capital of Djakarta.

Both stations will use the Intelsat series of communications satellites carrying voice, data and television. The Iranian station links the country at present with North America, Europe and Africa, while the Indonesian link encompasses the U.S., Europe, Japan, Australia, Hong Kong, Singapore and Malaysia.

AERONAUTICAL ENGINEERING

Pitch control for V/STOLs

A propeller using a pitch-varying technique that has otherwise been confined to helicopters will be studied for application to tilt-wing vertical and short take-off and landing aircraft of the 1970's.

Called cyclic pitch control, the method changes the pitch of each propeller blade as it moves around the propeller axis. This enables more lift to be produced on one side of the propeller than on the other, which in helicopters lets the pilot compensate for gusts and for the normally unequal lift on opposite sides of a chopper's main rotor.

Hamilton Standard division of United Aircraft Corp. is studying the technique for the U.S. Air Force, for use on medium-sized, four-engine, tilt-wing transports. It would give pilots direct control of the planes' pitching movements during vertical flight and transition to forward flight, which could eliminate the need for a tail rotor for attitude control.

The three-year program will also include studies of lighter blade materials, particularly composites such as boron-aluminum. The full-sized cyclic pitch propeller to be produced in the study will be made of fiber glass covered titanium, which the company says will be 60 percent lighter than solid aluminum blades.

SUPERSONIC TRANSPORT

Concorde cracks sound barrier

The Anglo-French Concorde supersonic transport has broken the sound barrier for the first time, reaching Mach 1.05 for almost nine minutes on Oct. 1.

At the altitude of the test flight, 36,000 feet, supersonic speed was about 690 miles per hour. During the flight, the crew tested the plane's performance by simulating various failures in the stabilization system.

During this month, plans are to extend the flights up to Mach 1.4, after which it will be grounded for a few weeks in preparation for tests up to the top design speed of Mach 2.2, or about 1,400 miles per hour.

Despite the Mach 1.05 speed on the test flight, the plane made no perceivable sonic boom, due to temperature and other conditions at flight altitude. The same effect can sometimes inhibit sonic booms at speeds as fast as Mach 1.4.

The Concorde is expected to go into commercial service in 1974, possibly a year behind the Russian SST, the Tu-144, but four years ahead of the U.S. SST.