

Butler Aviation

Its full-width flaps and slots grasping the air, the Skyservant takes off.

STOL

A takeoff shortly

New planes, regulations and an airline offer hope to short takeoff and landing STOL aircraft

One of the saddest stories in commercial aviation today is that of the STOL—short takeoff and landing aircraft. Its greatly reduced runway needs represent potential solutions to problems such as remotely located airports, congested airways and crowded airstrips. Yet a weird chicken-or-egg situation is literally holding the future back.

Aircraft manufacturers are deferring development of commercial designs, waiting for the airlines to cite some specific requirements. The airlines, in turn, don't want to pin themselves down until they see what planes will be available. To further slow things up, the Federal Aviation Administration has its hands full trying to work out airworthiness standards that will cover the wide variety of proposed STOL ideas, and is even less far along in evolving flight operations standards for the STOL craft's diverse and specialized roles.

A few signs of promise, however, are beginning to appear.

The nation's first regularly scheduled STOL air service will begin operations early this month, shuttling passengers around among Friendship Airport in Baltimore, Md., Washington National Airport and Dulles International Airport in Virginia. They all serve Washington, D. C.

Called Washington Airlines, the service is starting out with three Dornier Skyservants, West German airplanes ca-

pable of taking off and landing with crew and 12 passengers in some 730 feet, compared with two or three times that distance required by conventional planes of the same size.

The Skyservant gets its short-field capability from a standard STOL technique: huge flaps and leading-edge slots running the width of the wing to increase the lift available at the low speeds and steep angles at which the aircraft takes off and lands. Speed has its advantages, but the relative sloth of STOL aircraft—many can stay in the air at 50 miles per hour when conventional craft would stall and crash—makes them invaluable for crop-spraying, surveying and use in remote areas where large airstrips are not available.

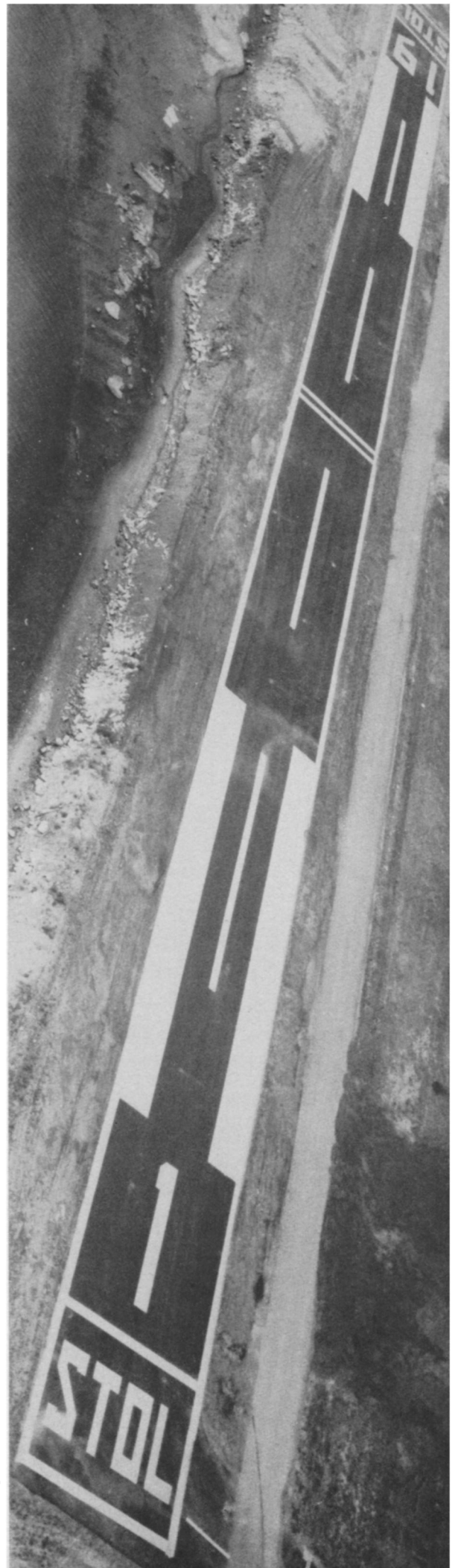
Yet Washington Airlines will be unique as a regular STOL service. Other air taxi lines use STOL-craft, such as the de Havilland DHC-6 Twin Otter, but only as conventional aircraft. Nevertheless, potential (as well as their present usefulness) has attracted manufacturers like flies. At least nine U.S. companies produce small STOL aircraft. Others are built in nine or more foreign countries.

A particularly thorny problem for STOL service planners is cost. The abrupt takeoffs and landings consume fuel ravenously and reduce the available

Port of New York Authority

A first: La Guardia's STOL strip →

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Geological Survey

Frenetic ground travel to and from New York's main airports may be replaced by STOL-ports along the Hudson river.

payload weight, until direct operating costs can climb to three cents or more per passenger mile, compared to two cents for regular craft. STOL operators are unlikely to feel qualms at charging premium prices for their service, however, since they will often be replacing even more costly forms of ground transportation.

A survey by the New York Port Authority has indicated that some 64 percent of air travelers get to and from airports by private taxi, the most expensive choice, while another 24 percent use airport limousines. Only about one passenger in eight, according to the study, uses public transportation or car.

Washington Airlines, therefore, can charge \$8.50 for any of its interairport hops with a good chance of success. The cab fare from National to Friendship is \$20, from Dulles to Friendship \$35 and from National to Dulles about \$15. Bus or limousine service from National or Friendship to Dulles is only \$2.50, but the travel time runs from 40 minutes to more than an hour, compared to 15 or 20 minutes by STOL.

The small lines, however, can handle only a limited passenger volume, and feel the effects of high direct operating costs more acutely. The major airlines may well become the STOL operators of the future. At present, most of the airlines' money is tied up in orders for the new generation of jumbo jets and the supersonic transport, so the future may be a long time coming. But the desire is there.

"Unhappily," says Edwin I. Colodny, senior vice president of Allegheny Airlines, "I have concluded that vertical or short takeoff aircraft will make no significant contribution to the demands of the short-haul traveler by 1975, despite the hopes and efforts of many. If we

are not to be in the same position by 1980, now is the time for funding a proper developmental effort."

The only such effort so far by a major U.S. airline is shifting into high gear. In mid-September, a French STOL called the Breguet 941 will undergo test and demonstration flights around Washington, New York and Boston, after which Eastern Airlines will fly the plane for 45 days on a simulated air-shuttle schedule over the same route.

To be produced under license in this country as the McDonnell Douglas 188E, the 52-passenger plane reportedly can take off in as little as 600 feet. Like the Skyservant, it gets its STOL ability from slots and flaps, and it offers one additional feature: interconnected propellers. Because of the high lift on a STOL wing, an engine failure on one side could cause enough imbalance to throw the plane out of control. The 188E's four props are joined by one continuous cross-shaft, so that if one engine goes out, its prop will continue to turn at the same rate as the others, keeping the lift even.

The curious treading-on-its-own-heels state of STOL technology is indicated by the passenger list for the upcoming trial flights. Besides builders (McDonnell Douglas) and potential customers (Eastern), there will be engineers from the National Aeronautics and Space Administration, who still think of the plane as a flying test bed for STOL research, and planners from the FAA, who hope it will at last provide them with some practical data for use in drawing up detailed airworthiness standards for future commercial STOL aircraft.

The first attempt at tentative STOL standards was completed in July, following nine months of full time pencil-chewing by as many as 30 FAA staffers.

The result, despite its relatively primitive state, consumes more than 230 pages, covering everything from directional controllability to drip drains on oil tank filler connections. But FAA rulemakers feel that the standards are still so general as to be impractical.

If STOL affairs in the air are in sad shape, things are even worse on the ground. There are virtually no STOL operational standards for airports, though many will need to be created especially for STOL aircraft. Steep take-off and landing angles, for example, will permit runways to be built in areas that are normally unusable because of nearby tall structures.

Until last month, there was not a single operational especially built STOL-only runway in the country. Now there is one, at New York's La Guardia Airport. It is 1,095 feet long, compared to the 4,000 feet of La Guardia's shortest conventional strip.

Yet it is on the ground that STOL planes offer one of their greatest advantages: the ability to move passengers in and out without interfering with the big jets. There are now several in-town STOL-port plans being considered for New York; two more are in the works for Los Angeles along with one in Boston, and rumblings are being heard from other cities.

The airlines, manufacturers, airport operators and FAA have been going around in circles, looking for a place to start STOL-ing. Now there may be several: the embryonic airworthiness standards of FAA will let manufacturers start designing large-scale commercial craft; Washington Airlines, if successful, will provide incentive to other small operators, and sales of the 188E could spur major competition from the rest of the industry.