



A people-jam at Washington National Airport is as much a problem as are planes backed up on a taxiway. Modern control centers could help both.

American Airlines

AIR TRAFFIC

The target is 1980

Engineers designing for the future of air traffic control systems have written off the next decade

by Edward Gross

In 1903, the world's only airplane passenger reached his destination—120 feet down the beach at Kitty Hawk—without any trouble or delay. Last year, not many of his 152 million followers could say as much. By 1980, 470 million optimistic passengers will continue to flood the commercial airlines, intensifying problems for which there are now no answers. Air traffic experts have written off the 70's as far as solving the air-travel problem is concerned. They are shooting for the 1980's.

Says Joseph D. Blatt, associate administrator for development of the Federal Aviation Administration, "It will take from now until 1980 to develop and display a system to remedy the problem." Blatt and his colleagues maintain that the issue must be faced today if answers are to be ready by the 1980's.

"It is not a question of who, what, why and where, but how and when," says J. R. Wiley, director of aviation for the Port of New York Authority. The choices, he contends, are either a rationing of flights or an all-out effort to solve the problem.

Although it is really panic reaction, a stopgap which could become a retreat from the problem, rationing has already begun. On June 1, Federal limitations will go into effect that will restrict the number of scheduled flight operations at certain major airports.

The present crisis reached the panic point when, in July, more than 22,000 flights were backed up for almost an

hour each in a chain reaction felt all the way to Europe (SN: 8/10, p. 131). The gap between the demand and the capacity of the airport system grew until, at that point, the imbalance almost reached a total system breakdown. It was then that rationing emerged as the only feasible solution.

Less direct efforts were aimed at private, general aviation, aircraft which also contribute to the glut; the Port of New York Authority instituted a fee for general aviation craft during peak travel hours. This took some of the pressure off; there was a 19 to 31 percent reduction in flights during those hours.

It is unlikely that there will be a summer like 1968 again, but this will be because of flight restrictions and additional stopgap measures, not because the system itself has been upgraded.

A long-range solution to the air traffic problem requires a systems approach to solve a series of interrelated problems. Crowded air corridors, congested runways and taxiways, inadequate gate positions, poor passenger pickup and delivery, shortage of ramp space for parking planes, overloaded passenger terminals and baggage claim areas, packed parking lots and ineffective routes to and from airports are just parts of a whole.

The FAA is attacking the air traffic control part of the problem through automation. By 1973, the FAA hopes to have its National Air Space (NAS) system in operation. Under NAS, all of the




N.Y. Air Route Traffic Control Center

nation's air route traffic control centers would be computer operated. These ground installations, located away from airports, control and direct aircraft while in flight. There are more than 20 of them and presently they keep planes separated in the air and, before arrival, hand over control of them to airport control towers. Otherwise, manual methods are used, such as time-consuming telephone communication, manual routing and visual identification of planes on radar.

Also under the NAS system, radar control towers at 60 of the nation's busiest airports will be automated by 1973. However, NAS will be a semi-automated rather than fully automated system because the human controller

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Port of N.Y. Authority

Achitoff: Loop system on the ground.

will still be left in to make the decisions.

This semiautomated stage represents stage A. There are no plans to institute stage B, which would provide area navigation via a system of multipath flight routes and data-link automation of air-ground information and instructions.

But air traffic control is only one part of the air travel picture. Ground traffic control would still be in the hands of human controllers who must tell the pilots which taxiways and runways to use, when to take off and when not to. With the advent of the coming generation of jumbo jets, the taxiway problem will be aggravated, points out Louis Achitoff, chief of the aviation technical services division of the Port of New York Authority.

The Boeing Company will deliver its first 747, with a 362-passenger capacity, to Pan American Airways in September.

The enormous size of these planes will make it necessary to increase the ramp space where they load and unload. Since airport space is finite, any increase in ramp space means a corresponding decrease in taxiway space. A taxiway is essentially a holding area along which planes move either for takeoff or unloading. Without sufficient taxiway space, airports could not drain off all their incoming planes while at the same time put outgoing flights into the air. The result would be a jam-up starting back at the ramps.

As a way to manage aircraft flow on the ground, Achitoff sees a system of electronic loops. Detectors would relay the ground location of an aircraft to a computer, which would then select routings to and from runways eliminating extensive and involved communication with the control tower.

Called STRACS for Surface Traffic Control System, it is slated for Kennedy International Airport in 1972.

But even solving the vital areas of air and ground traffic control would still

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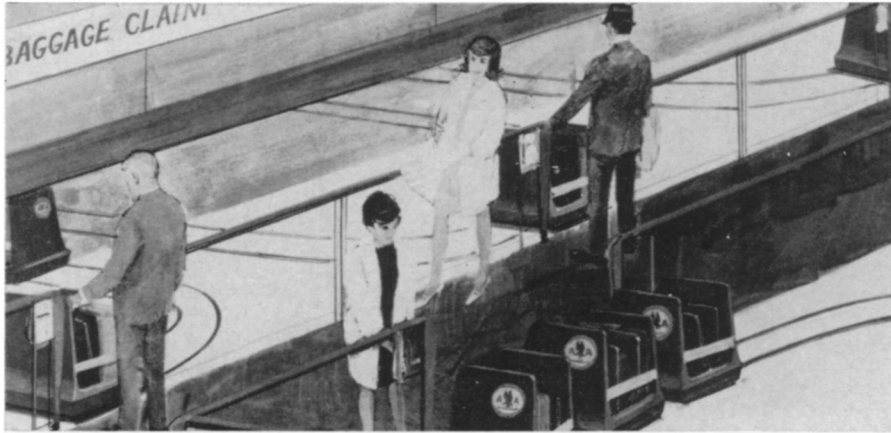
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American Airlines

Little things like baggage are important to a properly designed system.

leave attendant problems such as the bottlenecks at check-in counters and baggage claim areas. R. J. Sutherland, director of planning for American Airlines, is counting heavily on automated ticket processing through vending machines as an answer. Linked to a computer for fare calculations, they would be located in public places, and people would purchase their tickets from them with credit cards. Passengers holding the encoded tickets could avoid the terminal area by driving up to the parking lot or terminal curb, sticking the ticket in a machine and receiving directions to the boarding areas.

Luggage could be handled the same way. A passenger would place his baggage in a small telecar that runs on tracks. By placing an encoded baggage tag in a machine, the passenger could direct the telecar to his plane. At his destination, the same process would bring the baggage to the passenger.

Sutherland does not see rapid transit systems as effective answers to the traffic problems (SN: 4/12, p. 360) unless they are incorporated into a city's regular transit system, as has been done in Cleveland. Without the use of existing transit lines and facilities, the expense of airport rapid transit service would be prohibitive, he feels, especially in light of the fact that transit systems convey people to and from downtown areas and not all air travelers go downtown or come from there.

And building more airports will not solve the problem alone unless there is the rapid transit to go with it.

The final solution, however, rests on money. Even without the auxiliary services, about \$8 billion will be needed for new airports alone over the next 10 years. A principal source for such a sum—other than municipal bonds which are encountering difficulty all over the nation—is Congress, which has not been willing to give it in the past.

At present there are about a half

dozen bills in the legislative hopper, and the Nixon Administration is expected to introduce its own bill shortly. It will include a passenger tax, a general aviation fuel tax and a waybill tax on cargo, similar to an unsuccessful proposal in the last Administration, to finance airport construction and modernization.

"This will be a long-range effort," says Paul W. Cherington, assistant secretary for policy and international affairs of the Department of Transportation. "Even if put in now it would not remedy the problem for at least four or five years, because of the long lead time on construction and because the accompanying air traffic control systems would be needed with it."

In January, the FAA came out with a two-volume plan to cope with the growth of the aviation industry over the next 10 years. Called the National Aviation System Plan, it attacks five critical areas: air traffic control, air navigation, communications, aviation weather and airports. The plan offers remedies which include computer operations as in the NAS system; more sophisticated radio transmitters, receivers and radar beacons; improved distance measuring equipment, instrument landing systems and vertical/short take-off and landing craft; more weather planes and data-gathering equipment, and new airports at different locations. However, the plan admittedly missed some vital areas, including noise and air pollution, airport terminal congestion, airport access, aeronautical safety standards and economic regulation of the airlines.

In April, the FAA sat down with more than 800 representatives of the aviation industry at a three-day conference to review the plan and get their advice. The delegates are digesting the material before coming up with any formal recommendations. The conference will serve as the basis for a second meeting in 1970. ◇

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