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## AIRPORTS FOR JETS — A FEDERAL VIEWPOINT

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WITH the first announcement by manufacturers that jet aircraft were being designed for use in commercial air traffic, the Civil Aeronautics Administration inaugurated an immediate program of detailed study of the possible effects of this type of aircraft upon airways, airports and our overall objective of maximum air safety.

Even while civil jets were in the prototype stage, engineers from our Office of Aviation Safety were sent abroad to the factories to study the design and operating characteristics of the aircraft. Based upon the data they accumulated, simulated air traffic control problems which we felt sure would be created by the introduction of this type of aircraft were undertaken at the Technical Development Center at Indianapolis and were successfully resolved. Our Office of Federal Airways also made intensive studies, based on which we recently submitted to the Congressional appropriations committees a 5-year airways plan, which will increase the capability of our traffic control system for handling the oncoming jets.

In January, soon after assuming the office of Administrator, I presided over a symposium in which all areas of the industry participated for a complete and frank appraisal of the many problems which the introduction of jet transports would create in relation to airports.

All who participated have felt that definite progress was made in arriving at possible solutions to the anticipated problems. I believe that the best service the CAA can render in connection with these airport problems is to serve as a catalyst, bringing together the people best qualified to deal with specific phases, and thus, one by one, attack and solve them. This is the status today.

An important fact gathered from the symposium is that the jet aircraft, insofar as its relations to the airport are concerned, is not a particularly unique or different thing. It is bigger, heavier, and faster than the conventional aircraft with which we are dealing today, and these are the characteristics which will produce most of the problems

of the CAA, the operator of the airport and the air carrier in putting it into service.

Nor are these problems extremely difficult to approach and settle. We have a tendency in this country to use a dash of hysteria about any new development, and there are writers who inaccurately have built up the threat of the jet. There was no such attitude at our meeting, and none of the CAA specialists working in their fields has developed any fever. These problems will be accepted and solved in stride by all concerned, I am convinced. In this connection, we should remember that manufacturers of the two proposed pure jet transports tell us they will not be operating for almost four years, and thus we have time to prepare carefully rather than desperately.

Any new plane presents its own special demand for ground facilities, and, since new transports usually are larger, the runway requirements may need revision upward. This may be the case with jet transports. It was a subject of serious moment at the January meeting. A representative of the Airport Operators' Council reminded aircraft manufacturers and aircraft operators that taxpayers are pressed by demands for school money, for roads and streets and many other facilities, and said they would not approve more airport bonds. He said the necessary additions to runways could be had if demanded, but that additional charges for airport use by the carriers must be made to defray their cost.

We were told by the manufacturers that not every airport would need runways long enough for operation of jets at full load. For intercontinental flights the maximum, which they estimated at 9600 feet for sea level and standard temperature, would be required, but "if they want to operate the way they are today with present aircraft, they would probably not need more runway."

The amount of fuel needed on a given jet hop, as well as the length of runway required, is a function of the length of the flight. These proposed jet transports will carry 125,000 to 140,000 pounds of fuel when loaded for their longest hops and much less, of course, for shorter hops. It is probable that several existing airports are ready for jets with their present runway facilities.

#### *Route Structure to Be Determined*

The route structure of the air carriers that use jets will have to be determined before we can be sure what airports, if any, will need enlargement. While ideal hops in the medium-range jet would be 1,000 to 1,800 miles, it was indicated at our conference that there certainly would be jet service between major cities which lie 600 to 800 miles apart, and at the other extreme we would have intercontinental jets flying 4,000 miles. Another suggestion was that such hops as New York to Washington and then to the West Coast would be one pattern of jet service. Today, many pairs of cities which now have non-stop air service lie in the 1,000-1,800 mile bracket, and they

are scattered about the country. Only when the air carriers know on what routes they are going to use jets can we be definite about the totality of airport needs. The Federal Aid Airport Program will assist local sponsors with their airport problems.

It was pleasantly surprising, too, for us to learn that the prototype of one of the proposed jet transports now being flown is taxied up to the loading ramp under its own power and taxied away with its new load, and with no difficulty, according to the manufacturer. There has been much discussion about bringing a fire- and heat-blowing aircraft this close to an administration building and operating it on a crowded ramp. There is the distinct possibility that this anticipated problem will not bother us.

#### *Noise and Fuel Problem*

Noise, however, is going to be a problem. Manufacturers said they had reduced the noise for passengers inside the plane, and that a reduction of external noise of jet engines might be as much as 18 decibels with luck. In the case of the J-57 engine, this would mean something equal to or less than the level of the DC-6B. Noise of airplanes approaching and leaving a big city airport is a constant problem of the CAA. There was some opinion that the high speed of the jet and its fast climb gets it out of hearing range of the people on the ground very soon, and this does not disturb as much. This is hopeful, but the problem of the noisy plane is not yet solved.

Other airport problems brought by the jets will concern the facilities at airports, and for these, provision must be made. One of these new planes will carry 23,000 gallons of fuel as a full load. That's equal to two railroad tank cars. In addition, a jet transport may load as much as 4800 pounds of distilled water for use in increasing its power for takeoff. What are the demands on airport design and construction of this new and larger fueling and fuel storage requirement? This is a good example of the far reaching nature of jet problems, since it concerns the CAA, the airport management, the fuel company, and the air carrier. Undoubtedly, the CAA will bring representatives of these groups together for a detailed attack on this problem.

The effect of heat blast and spilled fuel on airport pavements will also be a problem. The military has not found heat blast on concrete to be of any serious effect, but spilled jet fuel can have a bad effect on some paving, especially in places where planes are serviced or stored.

Pavement strength must be considered when these new planes, weighing between 250,000 and 300,000 pounds gross, come into service. Again, not every airport will be called upon to accommodate them fully loaded, but some will. Weight distribution will be different, however, and will affect the problem. Instead of a single wheel, the landing gear of a jet transport will be four wheels, in dual tandem formation, as we are told by the manufacturers, and this configuration

enlarges the plane's "footprint" and spreads the weight far more than a single wheel. CAA engineers say that many, perhaps even most of our major airports now have paving of adequate strength under these conditions to accommodate the new planes. Moreover, paving breaks down slowly — over a period, usually, of two years — and this again gives us time to take any necessary remedial action. A fairly thin overlay of two or three inches of paving serves to increase strength, and this obviates the necessity in many cases of building an entirely new runway.

The impression remaining after the meeting was that the jet will bring new problems, but not of such nature, nor of such volume that they will produce a crisis. The feeling was general that the whole industry as well as Government is approaching the "jet age" with confidence and no real worry.