

Air traffic through the city of Honolulu is greater than in many mainland cities. Honolulu International Airport ranked 16th among the Nation's major airports in aircraft traffic in 1966. The noise problem may be one of degree, but it is found today in every city which handles flights of jet aircraft. A quick look at some relevant statistics will indicate the prevalence of the problem.

More than 100,000 aircraft are in active service in the United States. U.S. aircraft are divided into three classes: air carrier, which amounts to about 2,000 passenger and cargo airlines; general aviation, which accounts for over 75,000 private and business airplanes; and military, which has over 25,000 planes. Private and business airplanes are many times more numerous than airliners, but the airliners fly oftener, faster, and with more payload. The airliners, especially the jets, are bigger and more powerful (and thus noisier) than business and private aircraft, and are generally more active in populated areas than military aircraft are, thus our concern in regard to noise will be mainly with jet aircraft.

The major airports tend not only to get more traffic but also the larger airplanes. This is because the larger aircraft, the jet airliners, travel between major population centers of the world, while the smaller aircraft serve feeder routes and smaller cities. Every major city in the United States now has an airport with facilities to handle jet aircraft. In 1962, more than 60 of the airports in the United States had regular civil jet airliner traffic. Jet service will spread to many more communities as the new generation of high-performance jet airliners designed for shorter range trips and shorter runways come into service.

And it is precisely these jet aircraft which have made the high noise level an acute urban problem. Up until the development of these jets, most of us considered the noise level generated at airports by propeller planes a tolerable nuisance. But jetliners have caused serious complaints from residents and businesses below the flight lanes in every affected city.

Jet noise comes from two main sources: hot gases of combustion roaring out of the engine tailpipe, and the high-pitched whine emanating from whirling compressor blades that suck air into the engine. The aviation industry has devised suppressors that tend to cut down the roar of the exhaust, which is loudest during takeoff. But this success has been at a price: a fleet of some 50 planes equipped with suppressors would cost an airline about \$7.8 million over a 10-year period in reduced operating efficiency. At any rate, engineers generally agree the economic and mechanical limits of the suppressors have just about been reached.

Controlling the whine of the front-end blades, which is loudest when a jet is coming in for a landing, has been much less successful. Although the use of special materials and design characteristics on some of the newer jets have helped to diminish the whine, bigger jets continue to emit the irritating noise. This is an area that requires specific attention because noise from landing aircraft draw more complaints, by a ratio of about 5 to 1, than noise from planes taking off. An incidental factor here is that a landing plane is both decelerating and descending and, consequently, spends more time over a given area than a departing plane.