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CONFERENCE ON THE REDUCTION OF NOISE AND
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LONDON, ENGLAND, NOVEMBER 22-30, 1966

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**REGULATION BY LAW OF AIRCRAFT NOISE
LEVELS FROM THE VIEWPOINT OF
UNITED STATES AIRLINES**

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**International Conference on the Reduction of Noise and
Disturbance Caused by Civil Aircraft
London, November, 1966**

REGULATION BY LAW OF AIRCRAFT NOISE LEVELS
FROM THE VIEWPOINT OF UNITED STATES AIRLINES

by John E. Stephen

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REGULATION BY LAW OF AIRCRAFT NOISE LEVELS,
FROM THE VIEWPOINT OF THE UNITED STATES AIRLINES

by John E. Stephen

Introduction

This paper, while also relevant to other Conference subjects, is submitted with regard particularly to Committee No. 4:

"Method of Specifying Maximum Permissible Noise Levels, How Such Levels Should Be Determined, and Methods of Assessing Compliance".

This subject comprehends the establishment by law or regulation of maximum allowable noise levels, and the enforcement of such limitations -- possibly abetted by penalties for violation. This paper will be concerned with the questions of the necessity and comparative effectiveness of mandatory regulation of aircraft noise, considerations of appropriate regulatory authority and of conflicts of laws and jurisdiction, and the legal criteria to be met by any such regulation.

The paper is written from the viewpoint of the scheduled certificated-route air carriers of the United States.^{1/} These airlines are the principal operators of civil jet aircraft in the United States, and 16 of them operate internationally into a total of over 100 countries.

^{1/} Specifically, the Air Transport Association of America, which is the association of virtually all of the scheduled certificated-route air carriers of the United States.

The U. S. airlines are privately-owned companies whose stock in most cases is widely held by the general public. Their aircraft fleets (as of July 1, 1966) include 843 turbojet aircraft, 312 turboprop aircraft, and 813 fixed-wing piston aircraft and 27 helicopters.

The paper will consider mainly: (1) jet noise, (2) in flight, (3) on regularly-operated services, (4) near airports, particularly take-offs and landings. While piston aircraft have been the source of some noise, the focus of most complaints is now on jet aircraft.^{2/} In the case of the United States airlines, with the exception of helicopter operators, aircraft fleets are expected to be wholly jet aircraft by 1968. It is principally inflight noise which is the subject of current concern in the United States, rather than that from ground "run-ups" and static engine-testing, which has been substantially eliminated through cooperative measures by airlines and airport operators. Similarly, it

^{2/} Still, the Port of New York Authority's renowned "112-PNdb" jet noise limit at Kennedy Airport, N. Y. is equated with, and was based upon, "a level of noise which in terms of human perception and annoyance or lack thereof equals the level of noise produced by conventional 4-propellor piston aircraft which operated to and from the Airport during the years 1948 - 1958 and thereafter". (Emphasis supplied) (John R. Wiley, Director of Aviation, Port of New York Authority, Affidavit, paragraph 41, p. 13, The Port of New York Authority v. Town of Hempstead, et al, Civil Action No. 64-C-45, U. S. District Ct., E. D., N. Y.) And see Goldstein, "A Problem in Federalism, Property Rights in Air Space and Technology", in "Alleviation of Jet Aircraft Noise Near Airports" (Report of the President's Jet Aircraft Noise Panel), March, 1966, p. 132.

is noise from regularly-operated flights which has received the most attention. In the United States, largely through airlines initiative, training flights have been voluntarily relocated to remote airports. Finally, it is noise associated with landing and take-off, rather than en-route operations, which is the principal problem in the United States. This means that the noise problem in the United States is identified with those localities having jet airports.^{3/} The number of such localities is small.^{4/} Of more than 9,000 airports in the United States, only 117 receive jet aircraft.^{5/} This does not imply

^{3/} Causing one esteemed commentator to suggest, in all seriousness, that the problem be described as "airport noise" rather than "aircraft noise". (Dygert, An Economic Approach to Airport Noise, 30 Journal of Air Law and Commerce, 207 (1964).

^{4/} "*** The more serious airport noise problems are now typically found near the relatively small number of very large U. S. cities..." (Report of the President's Jet Aircraft Noise Panel, supra, n. 2, p. 3).

^{5/} Of course, the nation's largest metropolitan centers are nearly all on the jet airport list. The introduction of new short and medium-haul jets, with the capability of operating from smaller airports has resulted, however, in regular jet service to cities the size of Burlington, Vermont (population 35,531) and Fort Meyers, Florida (population 22,523). The U. S. Federal Aviation Agency estimates that there will be 315 jet airports in the United States by 1970 and 500 by 1975. Of the 538 jets and 122 turboprop aircraft on order by U. S. airlines at the beginning of 1966, two-thirds are medium and short-haul aircraft, such as the Boeing 727, BAC-111, DC-9, and Boeing 737. The noise of the smaller jets is not as serious as the big jet noise problem.

that all of these 117 communities in the United States have a serious airport noise problem. On the contrary, it would appear that many do not. The Special Subcommittee on Regulatory Agencies of the House Committee on Interstate and Foreign Commerce of the United States Congress reported that approximately 12 of the (then) 65 jet airports in the United States had "acknowledged noise problems".^{6/} The jet airports which have come into service since that report are largely secondary airports, receiving the smaller jets, which generally do not create as serious a noise problem.^{7/}

It is difficult to assess the precise extent of the airport noise problem in the United States. One federal agency has been quoted as estimating the total number of airport neighbors in the U. S. seriously affected by airport noise as 100,000.^{8/} This number would seem unrealistically small to some. Whatever the actual number of persons seriously affected, Government and industry alike in the United States are concerned, and seek a "solution".

^{6/} House Report No. 36, 88th Congress, 1st Sess. 24 (1963), "Investigation and Study of Aircraft Noise Problems" (the "Harris Report"), p. 17.

^{7/} For the future, it is apparent that planned heavier jets (e.g., the "stretched" versions of present jets, the "jumbo" jets such as the Boeing 747, and the supersonic transport) might potentially intensify the noise problem. However, the design specifications of these future aircraft are purportedly being pegged to a noise level as low or lower than present jets.

^{8/} New York Times, March 6, 1962. In context, it appears that this referred to the total number of persons who might have a legal cause of action from airport noise.

Airport Noise Alleviation in the United States

Alleviation^{9/} of airport noise in the United States has been the joint concern of the Federal Government, airport operators and industry (aircraft manufacturers, air carriers and pilots).

As far back as 1916, through the National Advisory Committee for Aeronautics ("NACA"), the Federal Government took official note of the aircraft noise problem, and during the 1920's and 1930's conducted extensive research on aircraft noise sources.^{10/} During and following World War II, the United States military services were occupied with (military) jet noise and financed a substantial amount of research and development, averaging about \$2 million a year.^{11/} However, this activity was apparently not because of airport neighbors. It has been stated that the U. S. military

^{9/} The term now popularly in use in the United States appears to be "alleviation" (e.g., Alleviation of Jet Aircraft Noise Near Airports -- the "White House Report"). For several years it had been "abatement" (e. g., National Aircraft Noise Abatement Council). While the evolution may be lexicographic accident, it is plainly a preferable choice from the legal point of view.

^{10/} Noise: Its Effect on Man and Machine (Report of the Committee on Science and Astronautics, U. S. House of Representatives, 86th Congress, 2d Sess., H. Rept. No. 2229, Oct. 13, 1960), pp. 16-17.

^{11/} The Harris Committee Report, supra, n. 5, p. 12.

concern has been only:

" *** the effect of any such noise upon the military personnel, either operating the aircraft in the air, or servicing the aircraft on the ground." ^{12/}

With the advent of civil jet noise problems following World War II, the National Aeronautics and Space Administration ("NASA"), the Federal Aviation Agency, and the Bureau of Standards of the United States invested vast amounts in research on noise suppression and effects. ^{13/} The NASA, and earlier NACA, research on the airport-community noise problem has resulted in "major accomplishments". ^{14/}

The aviation industry of the United States (airframe manufacturers, air carriers, and powerplant manufacturers) has likewise conducted extensive research and development on aircraft noise suppression, and has devoted vast facilities and manpower to a solution. ^{15/} In fact, the American aviation industry has provided

^{12/} The Harris Committee Report, supra, n. 5, p. 12.

^{13/} H. Rept. No. 2229, supra, n. 10, p. 16; the Harris Committee Report, supra, n. 6, pp. 13-15. See the discussion of specific programs in the White House Noise Report, supra, n. 2; Hubbard (NASA), pp. 35-42; Woodall (FAA), pp. 43-47; von Gierke (Air Force), pp. 48-58.

^{14/} Ibid., p. 35.

^{15/} Harris Committee Report, p. 15.

significant leadership to the continuing and expensive effort to alleviate aircraft noise.^{16/} Aviation industry acoustical and noise research personnel are recognized as "the most active" in the field.^{17/} The Society of Automotive Engineers (SAE) has performed extensive studies on aircraft noise abatement^{18/} and the development of revised aircraft noise measurement criteria.^{19/}

The first commercial jet flights by U. S. air carriers were in October, 1958. By the end of 1959, the aviation industry had formed the National Aircraft Noise Abatement Council ("NANAC"), as a non-profit corporation to coordinate

^{16/} The suggestion in one American paper that "competitive business pressures have resulted in manufacturers and operators giving noise reduction a low priority" seems unwarranted. Actually, U. S. manufacturers and airlines are according noise considerations probably the highest priority next to safety itself. (See Report, House Committee on Science and Astronautics, supra, n. 10, p. 50.) The Airport Operators Council has stated that the principal research being done in the noise field today is by the aircraft and engine manufacturers, as well as NASA.

^{17/} Harris Committee Report, p. 15.

^{18/} Ibid.

^{19/} Two SAE studies have been adopted by the Federal Aviation Agency as the basis for determining proposed maximum allowable noise levels for aircraft certification in the United States. (SAE/ARP 865, dated August 31, 1964, "Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity for Use in Evaluating Aircraft Flyover Noise" and SAE/ARP 865, dated October 15, 1964, "Definitions and Procedures for Computing the Perceived Noise Level of Aircraft Noise").

a nation-wide attack upon the aircraft noise problem. NANAC was composed, originally, of the Aerospace Industries Association (consisting of the principal airframe and engine manufacturers), the Air Line Pilots Association (comprising 15,000 licensed commercial airlines pilots), and the Air Transport Association of America (made up of the 46 scheduled certificated-route carriers of the United States). Subsequently the organization was expanded by the participation of the Airport Operators Council (now the Airport Operators Council International, made up of 107 member organizations, representing more than 600 public airports in the 50 states of the United States, and 10 foreign states), and the American Association of Airport Executives (the managers and directors of more than 400 airports throughout the United States).

NANAC has been responsible for the performance of extensive research in connection with the reduction of aircraft noise at source (i. e., aircraft engine and frame design), flight procedures for noise reduction, and improvements in ground environment. NANAC was a pioneer and the leading force in bringing about widespread cooperative noise abatement

programs throughout the United States, and participated in by the Federal Aviation Agency, airport operators, pilots and airlines, including the establishment of preferential runways and other noise-limiting flight procedures at many major airports, the initiation of widespread community joint noise-abatement standing committees, and the establishment of an organized noise complaint and advisory center.^{20/}

In wide use at airports of the United States are refined take-off procedures, developed and tailored by NANAC to produce the smallest amount of noise commensurate with safety requirements and to confine noise to the smallest possible area adjacent to the airport.^{21/} NANAC has also developed and secured wide acceptance and application of the increased 3⁰ visual glide-slope

^{20/} For a discussion of the earlier role of the voluntary industry association known as National Air Transport Coordinating Committee (NATCC) -- a predecessor of sorts of NANAC in the New York area -- including a program of preferential runway systems eventually extended to 21 airports across the United States, measures to inhibit maintenance runup noise, development of pattern altitudes for take-off and landings, and transfer of training flights to remote airports, see the paper of John R. Wiley, Director of Aviation, The Port of New York Authority, "An Airport View of Noise Abatement Proceedings (sic)", (draft), p. 2.

^{21/} For a discussion of these flight procedures, see the paper in Conference Committee 3 by the Air Transport Association, "Take-off and Landing Techniques to Accommodate Noise Abatement" and Frankum, "Jet Aircraft Noise Abatement", President's Jet Aircraft Noise Panel Report, supra, n. 2, p. 99.

and of uniform carrier maintenance planning, under which the number and duration of high-power maintenance ground run-ups during nighttime hours are rigidly restricted.

Of particular importance among NANAC innovations is the development of a "systems analysis" (i. e., the total aircraft noise/airport environment complex) for the approach to a planned overall program for alleviation of jet noise. The program was conceived, and has been carried forward, under the direction of the NANAC Research Committee, under the Chairmanship of John M. Tyler, Project Engineer of Pratt and Whitney Aircraft Company, East Hartford, Connecticut.^{22/} The NANAC Systems Project has recently been assigned to the Society of Automotive Engineers for implementation, with Mr. Tyler as Chairman.

Under the NANAC approach, a computerized "solution" to systems analysis will be derived through construction of a "mathematical model", in which the various elements making up

^{22/} Mr. Tyler is a member of the United States delegation, assigned to Committee 1. His Conference paper, "Operations Research Program to Develop Low Noise Air Transport System at Minimum Cost", describes the systems approach in detail.

the complex will be individually costed out and then "traded off" against each other to produce the most economical combination of remedies: e. g., engine design, aircraft configuration, flight operational procedures and compatible land-use measures.

The NANAC (now SAE) systems analysis project ("Operations Research Program") introduced a coordinated and integrated approach to the aircraft noise problem in the United States. All segments of the American aviation community -- airframe producers, engine manufacturers, pilots, airport operators and air carriers -- have been involved to this time and have cooperated fully.

The NANAC/SAE systems formulation is being carried forward in the Society of Automotive Engineers under "Research Project Committee R2". Committee R2 is made up of authorities and noise experts drawn from the fields of engines, aircraft, air transport operations and airport management.^{23/} Under the present SAE management, the scope of the Study has been expanded to embrace additional concepts of engine and airframe design, aircraft flight techniques to alleviate noise effect, and "design" of both the airport and the community to reduce the impact of airport noise.

^{23/} Tyler, op. cit., supra, n. 22, pp. 1, 2.

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Another SAE Committee, A-21 "Aircraft Exterior Noise Measurement" has been engaged in the development of an acceptable acoustical measurement for aircraft noise, under the Chairmanship of Mr. Frank Kolk, Assistant Vice President - Engineering and Development, American Airlines. It has made significant progress in the formulation of an authoritative measurement procedure. Both of the SAE Committees have provided input for industry and government noise programs.

Many of the industry aviation authorities and noise experts from the National Aircraft Noise Abatement Council "Operations Research Program", which has now been assumed by SAE, have also served as expert advisors to the United States Government in the "Ad Hoc Jet Aircraft Noise Panel" established by the Office of Science and Technology, in the Executive Office of the President of the United States, which produced the previously cited Report, "Alleviation of Jet Aircraft Noise Near Airports".^{24/}

^{24/} Captain Charles H. Ruby (President of the Air Line Pilots Association), President of NANAC; M. Paul Zimmerman, formerly Executive Director of NANAC, as a Consultant to the Panel; John M. Tyler (Director of Jet Engine Noise Research at Pratt and Whitney Aircraft), Chairman of the NANAC Research Committee; and Frank Kolk (Assistant Vice President - Engineering and Development, American Airlines), A. L. McPike (Douglas Aircraft Co., Inc.), and Albert H. Odell (Aeronautical Planning Section, The Port of New York Authority), members of the NANAC Research Committee; Sidney Goldstein (General Counsel, The Port of New York Authority) and Lyman M. Tondel, Jr. (Cleary, Gottlieb, Steen & Hamilton of New York), members of the NANAC Legal Committee.

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In the New York City area, a unique Government - industry organization, the Aviation Development Council, functions effectively in fostering noise alleviation measures. The ADC includes Federal and local government, manufacturers, pilots, and U. S. and foreign airlines.^{25/}

Among the objectives of the ADC are:^{26/} (a) to explore, evaluate and recommend measures to alleviate the effect of aircraft noise; (b) to collaborate in planning location of public works, schools, buildings, hospitals and churches for noise avoidance; (c) consider and recommend appropriate zoning measures, redevelopment projects and land acquisition; (d) evaluate aircraft noise performance and undertake corrective measures with appropriate airlines and agencies; and (e) provide public information regarding noise developments in the area.

^{25/} The Council is headed by James T. Pyle, Director, formerly Deputy Administrator of the Federal Aviation Agency, and includes as member representatives: Oscar Bakke, Director, Eastern Region, Federal Aviation Agency; Harold E. Gray, President, Pan American World Airways, Inc.; Karl G. Harr, Jr., President Aerospace Industries Association; Floyd D. Hall, President, Eastern Air Lines, Inc.; Thomas E. Orpin, Manager, U. S. A., British Overseas Airways Corp.; Charles C. Tillinghast, Jr., President, Trans World Airlines, Inc.; G. Marion Sadler, President, American Airlines, Inc.; Georg Stoecker, General Manager - North American Division, Lufthansa - German Airlines; Charles H. Ruby, President, Air Line Pilots Association; and Austin J. Tobin, Executive Director, The Port of New York Authority.

^{26/} Release, Aviation Development Council, April 18, 1963.

It is apparent that, even in the substantial absence of formal regulation by law of aircraft noise, the aviation community in the United States has exercised effective initiative to meet the aircraft noise problem. Contrary to the impression at times suggested, that selfish economic considerations inhibit any effective initiative in developing practical approaches to the noise problem, substantial accomplishments have been made toward alleviation, through measures largely initiated by the aviation community itself. As observed by the Congressional Harris Committee, this has been done without regard to money costs. The Committee concluded that primary responsibility for development of noise suppression in the aircraft should continue to reside in the manufacturers.^{27/}

The House Committee on Science and Astronautics, based upon a study by Colonel Roscoe Turner, special staff consultant to the Committee, and after extensive hearings, concluded that:

"(7) Both the Government and industry recognize their responsibility to the public to consider noise abatement in the design of aircraft, aircraft engines, rockets and missiles". (Emphasis supplied.)^{28/}

^{27/} Harris Committee Report, pp. 19-20, Finding and Fact No. 5.01, p. 26. As noted previously, the Airport Operators Council goes even further, saying that the principal research in the noise field today is by the aircraft and engine manufacturers, in addition to NASA.

^{28/} Report, supra, n. 10, p. 50.

The United States airlines, at tremendous economic costs, have made substantial gains in the alleviation of jet noise.^{29/} The commercial air carriers, unlike the military services, gave extensive time and attention to pre-operational planning for noise suppression prior to their introduction of jet powerplants. As found by the Congressional Committee,

"The adaptation of the military straight jet powerplants to commercial transport use was delayed by the American air carriers for 2 years (pp. 4,5) owing to noise considerations".^{30/}

Predating even the industry introduction of turbofans, more than \$50 million had been spent on research and development to perfect in-flight sound suppressors. Even before 1960 the suppressors were in use,^{31/} and by 1962 the airlines had installed the suppressors on at least 325 jet aircraft at a cost of \$240,000 per 4-engine jet -- a total of \$73 million for the industry.^{32/} It was

^{29/} 108 Congressional Record 10989 (1962).

^{30/} Harris Committee Report, supra, n. 6, p. 7.

^{31/} Statement by H. E. Gray, President, Pan American World Airways, in Report of Proceedings, National Aircraft Noise Symposium, sponsored by the Federal Aviation Agency, Jamaica, N. Y., June 9, 1965, p. II-1. And see Harris Committee Report, pp. 7, 13.

^{32/} Ibid.

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estimated that by 1965, the industry had invested nearly \$150 million in installation of suppressors.^{33/} In addition to this capital investment, it has cost the airlines approximately \$1,0,000 per aircraft per month to carry the suppressors, due to increased weight, reduced speed and drag -- a total for the industry of \$36 million per year.

The industry's subsequent design and development of the fanjet engine was for the very purpose of reducing noise,^{34/} and in the words of the Congressional Committee constituted "the most significant advance in the aircraft noise abatement field within the past few years".^{35/} Fanjets were substituted for straight turbojet engines in the future orders for jet transports of all of the American carriers, and in the case of one carrier were substituted for all existing turbojet engines, which were removed, at an expenditure of \$1 million per aircraft.^{36/}

^{33/} Gray, op cit., supra, n. 31, p. II-1.

^{34/} Affidavit of John M. Tyler, Project Engineer, Pratt and Whitney Aircraft Company, in Port of New York Authority v. Town of Hempstead, et al, supra, n. 2, p. 2.

^{35/} Harris Committee Report, p. 8.

^{36/} Ibid.

Thereafter, when the unanticipated "compressor whine" noise associated with the fanjet itself became a different form of annoyance, the industry redesigned and refitted the fanjet engines (with "hush kits" and other modifications). As the Congressional Committee noted:

"After the modification was designed, all the fanjets which had been produced were modified; the retrofit necessitated the expenditure of substantial moneys by the powerplant manufacturer, the airframe manufacturer, and the air carrier (pp. 292,600), and brought the air carrier no economic reward".^{37/}

The turbofan aircraft has resulted in the production of a reduced noise level, averaging at least 4 PNdb less than comparable jet aircraft.^{38/}

From the airport operators' side, numerous -- and expensive -- airport modifications have been made for noise abatement, e. g., special instrumentation to assist the aircraft operator in following prescribed noise abatement procedures and runway extensions to enable modified take-off procedures for the reduction of noise.

^{37/} Harris Committee Report, p. 8.

^{38/} Wiley, *op. cit.*, n. 20, p. 7; Odell, "Jet Noise at John F. Kennedy International Airport", Report of President's Jet Aircraft Noise Panel, *supra*, n. 2, p. 164. The controversial "Land Use Planning Guide" published for information by the Federal Aviation Agency assigns a 5 PNdb reduction to fanjets.

For example, the Port of New York Authority has carried out extensions costing several million dollars to the three runways at New York's Kennedy International Airport solely out of noise abatement considerations.^{39/} Needless to add, the costs of these runways and other modifications of airport facilities are being passed to the airport users, through lease charges, landing fees, etc., and are thus ultimately borne in large measure by the air carriers. The airlines serving New York's Kennedy Airport, for example, have agreed to pay more than \$11 million at that airport alone for the extension of runways which are required, not for operational reasons, but solely for noise abatement purposes.

The result of the continuing cooperative program of noise alleviation measures in the aviation community of the United States has been a substantial reduction of aircraft noise. It has been noted by the Assistant Corporation Counsel of the City of Chicago, as operator of Chicago O'Hare International Airport -- the nation's busiest airport -- that the volume of noise complaints according to FAA control tower records has decreased steadily since 1962, by

^{39/} Wiley, op. cit., supra, n. 20, p. 4; Odell, op. cit., supra, n. 29, p. 164.

more than 60%, despite a substantial increase in the volume of air traffic.^{40/} Albert H. Odell, of the Port of New York Authority's Aeronautical Planning Section has remarked that,

"In general, each new aircraft model that has come along has been a little quieter than preceding models on takeoff".^{41/}

Mr. Odell confirms that more than 99% of flights from New York's Kennedy International Airport by actual measurement now operate within the noise limits established for the protection of Kennedy environs.^{42/}

The General Manager of the remaining airport of the nation's three largest, Los Angeles International Airport, has similarly commented upon the significant noise reduction made possible by the improved power to weight ratios and thrust reduction of the newer aircraft.^{43/}

^{40/} James E. Strunck, Report of the Jet Aircraft Noise Panel, supra, n. 2, p. 152.

^{41/} Odell, op. cit., supra, n. 38, p. 164.

^{42/} Odell, op. cit., infra, n. 44, p. 7.

^{43/} Fox, ibid, p. 158. And see Supplemental Affidavit of Stannard M. Potter, in Opposition to Motions for Preliminary Injunction, American Airlines, et al and the Administrator of the Federal Aviation Agency v. Town of Hempstead, et al, (E.D. N.Y.) 63 Civ. 1280, August 12, 1964, pp. 2a, 3a.

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Construction of major new jet airports away from metropolitan centers is likewise making a significant contribution to the reduction of overall airport noise in the United States.

The new (Washington, D. C.) Dulles International Airport, located on 10,000 acres of rural land some 28 miles from Washington, and constructed as the first United States airport designed from the beginning for jets, has experienced a negligible level of noise complaints in its several years of operation. Houston, Texas -- the nation's sixth largest city -- has similarly located its new Jetero Intercontinental Airport in an unpopulated area of 4,000 acres at considerable distance from the city, as a planned measure to reduce noise annoyance. In fact, the siting of planned new and additional jet airports to serve the nation's major cities, e. g., Dallas-Fort Worth International Airport, is now being based on noise considerations as a principal factor, unlike many of the municipal airports built in earlier years.

The noise "problem" at major existing airports is also being alleviated through still other measures: e. g., (1) the recent acquisition by the Port of Seattle, Washington of extensive "avigation easements" in the noise-sensitive areas adjoining Seattle - Tacoma International Airport, and (2) the acquisition in fee of the entire

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noise-sensitive residential area of Playa del Rey as part of the extended clear zone of Los Angeles International Airport.

These accomplishments, in substantial alleviation of airport noise in the United States, are, moreover, reflected in the experience data on legal claims and noise litigation. It is claims and lawsuits based on noise which the airport operators seem most to apprehend, and which are regarded as some sort of criterion of seriousness of the "noise problem". ^{44/} But of 124 airports in the 1965 survey of the National Aircraft Noise Abatement Council, the vast majority -- 98 -- had no noise suits

^{44/} Thus, the Airport Operators Council held a Special Aircraft Noise and Legal Conference in Dallas, Texas on March 9-10, 1966 out of a reported "concern over recent adverse aircraft noise court decisions and a need to formulate remedial legislation on the subject". In a different context, the Port of New York Authority representative has stressed that in the approach to a design of a quiet aircraft, the economic standard to be observed in setting the noise level to be attained should be one "... low enough to remove the causes of the many lawsuits now threatening the industry". Odell, "Development and Enforcement of Noise Standards" (draft paper for Committee 4), p. 5. Similarly, it was "litigation" which was originally described in the publication "Land Use Planning Relating to Aircraft Noise", as constituting the most serious "community reaction". See also Goldstein, op. cit., supra, n. 2, p. 132.

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pending.^{45/} Plainly there has been no "flood of litigation" as predicted by some commentators.^{46/}

In sum, significant progress has been made by the aviation community in alleviating airport noise in the United States. These achievements have been made under an essentially voluntary and cooperative program by government and industry. The Congress has described the results as "major accomplishments".

Nevertheless, there has arisen in the United States within the past year or so a call for more formal action by Government --- particularly Federal legislation and regulation. These entreaties culminated in March, 1966 with a policy declaration by the President of the United States, in effect acknowledging, if not asserting, the responsibility of the Executive Branch of the Federal Government for dealing with the aircraft noise problem, and directing the interested Federal agencies, after

^{45/} National Aircraft Noise Abatement Council, Aircraft Noise Litigation and Claim Survey, June, 1965. Moreover, 25% of the claims pending were either dormant for several years or already decided on preliminary proceedings for the defendant.

^{46/} Hearings, Aircraft Noise Problems, Subcommittee of the House Committee on Interstate and Foreign Commerce, 86th & 87th Congress (1963), pp. 664-666.

necessary study, to recommend legislative or administrative actions "to move ahead in this area". ^{47/} This Presidential adjunction is now being carried out within the Federal Government, along the lines set forth in the March, 1966 Report of the Office of Science and Technology. ^{48/}

Regulatory Jurisdiction over Aircraft Noise in the United States

In the United States, the legal authority for governmental control of aircraft noise has been largely viewed as that of local governments, rather than the national government. Several factors are involved. The policy has its principal explanation, however, in American constitutional law.

^{47/} President Lyndon B. Johnson's "Transportation Message" of March 2, 1966. The interested Federal agencies were identified as the Federal Aviation Agency, the National Aeronautics and Space Administration, the Department of Commerce, and the Department of Housing and Urban Development. Coordination of the proposed action program was given to the President's "science advisory" (i.e., the Office of Science and Technology, in the Executive Office of the President, the Director of which is Dr. Donald F. Hornig).

^{48/} Report, Office of Science and Technology, supra, n. 2.

Under the American Constitution, the national (Federal) Government is said to be one of solely "express" or "enumerated" powers. That is to say, any powers not expressly given to the Federal Government in the United States Constitution are reserved to the 50 States, each of which has its own State Constitution. Some of the powers of the State Governments are, in turn, often delegated to local governments, e. g., municipalities as the owners and operators of airports. Of course, some of the express powers given to the Federal Government are extremely broad (or have been broadly construed by the United States Supreme Court). An example is the power given to Congress, as the Legislative branch of the Federal Government, to regulate the interstate and foreign commerce of the United States.^{49/} Under the aforementioned principles, the commerce clause constitutes a grant of express power to the Federal Government (i. e., the Congress), but a denial of such power to the States. A State may not pass conflicting legislation in an area expressly given to the Federal Government under the United States Constitution and "pre-empted" by an implementing Act of Congress.^{50/}

^{49/} U. S. Constitution, Art. I, Sec. 8, cl. 3.

^{50/} Allegheny Airlines, Inc. v. Village of Cedarhurst, 132 F. Supp. 871 (E. D. N. Y. 1955), aff'd. 238 F. 2d 812 (2d. Cir. 1956)

Most commercial air transportation in the United States is held by the courts to be "interstate commerce" within the meaning of the Federal Constitution. In fact, even flights which do not cross state lines have been held to come within the commerce clause of the Constitution, as they may penetrate a federal airway, or endanger the safety of interstate flights.^{50A/}

Under the commerce power, and, to some extent, its Constitutional postal and military powers, Congress has enacted the organic national statutes regulating air commerce in the United States. Each of these legislative enactments has made clear the Congressional intention to leave the responsibility for the ownership and development of airports with local governments. Thus, the first Federal legislation concerned with airports provided that airports be under the "jurisdiction and control of municipalities concerned ***".^{51/}

That Congressional policy was repeated in the Civil Aeronautics Act of 1938,^{52/} which prohibited the Administrator

^{50A/} Rosenhan v. United States, 131 F. 2d 932 (10th Circuit), cert. denied, 318 U. S. 790 (1943).

^{51/} The Air Commerce Act of 1926, 44 Stat. 570

^{52/} 52 Stat. 973

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of Civil Aeronautics under the Act from acquiring any airport. However, the Act laid the basis for Federal participation in the improvement, construction and development of a national system of airports.

Congress subsequently enacted a special statute under which the Federal Government was to assist in the financial development of local airports which fit into the "national airport plan" formulated by the Civil Aeronautics Administrator.^{53/}

Then, in the present national aviation regulatory statute, the Federal Aviation Act of 1958, which replaced the Civil Aeronautics Act of 1938, the Federal airport assistance program was placed in the new Federal Aviation Agency for administration.

However, the role of the FAA in airport control is limited to (1) financial assistance of local airport development, in accordance with the "national airport plan", and to (2) an advisory role under the Federal Aviation Act on the effect of proposed airport construction on the use of airspace.

Finally, the Administrator of the Federal Aviation Agency has a left-handed sort of influence over local airport construction

^{53/} The Federal Airport Act of 1946, 60 Stat. 170.

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and development through his statutory power under the Aviation Act to grant or deny an air carrier an operating certificate for the operation of a given aircraft in scheduled service at a particular airport. The grant of the certificate implies that the airport involved has fulfilled all applicable Federal requirements to support the operation of the particular aircraft involved. If the certificate is withheld because of any airport deficiencies under the Federal requirements established for that aircraft, the aircraft cannot operate into the airport involved. This could become a serious competitive factor among airports.

In brief, although local governments (or their agencies) own and operate virtually all of the airports in the United States,^{54/} the national scheme of air transportation established by the relevant Acts of Congress contemplates that airport development shall be unified and coordinated by the Administrator, FAA (under the "national airport plan"), so as to contribute to the overall air transportation system. Under this analysis, airport operators contend that the Federal Government has de facto, if not de jure, responsibility for airport operations, including noise.

^{54/} An exception is the two Washington, D. C. airports, Washington National Airport and Dulles International Airport, which are owned by the Federal Government and administered by the Bureau of National Capital Airports of the FAA.

Financial Responsibility for Aircraft Noise Damage

The question of legal responsibility for aircraft noise was presented to the United States Supreme Court in the celebrated case of Griggs v. County of Allegheny,^{55/} The Court held that the airport operator, rather than the United States Government, was liable for damages from frequent, low-flying aircraft operating from the Pittsburgh, Pennsylvania airport, because the initiative in construction and development of the airport, including the selection of site and the acquisition of necessary aerial approaches, was in the local airport operator (the County government). The Griggs decision is now settled law in the United States.

The Griggs opinion has had a significant impact on the policies as to aircraft noise followed by both local and Federal Governments. The effect on the Federal Government, particularly the Federal Aviation Agency as the aviation regulatory agency for safety and air traffic control, has apparently been to cause it to exercise considerable restraint and conservatism in interpreting the extent of its statutory authority to regulate aircraft noise (as

^{55/} 369 U. S. 84, 7 L. ed. 2d 585, 82 S. Ct. 531 (1962).

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well as safety, airspace and air traffic operations generally), on pain of shifting the rationale of the Griggs decision and incurring Federal legal liability for damage from aircraft noise.^{56/}

The airport operators, on the other hand, have sought diligently to avoid the impact of Griggs. The Airport Operators Council has mounted a continuing campaign to secure a dilution or overruling of the Griggs case by the Supreme Court, or in the alternative Congressional legislation to overcome the Court's decision by: (a) a statutory declaration of Federal pre-emption of jurisdiction and liability for noise from aircraft operating in the navigable airspace, or (b) enactment of a Federal financing program, under which airport operators would be indemnified

^{56/} See, e.g., Statement of Najeeb Halaby, supra, n. 25, p. 1-2. Also, Testimony of James Hill, Deputy General Counsel, Federal Aviation Agency, in Hearings, Aircraft Noise Problems, House Committee on Interstate and Foreign Commerce, Dec. 6, 1962, pp. 671-672.

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for adverse money judgements based on noise, or otherwise
^{57/}
 reimbursed for costs of noise abatement.

Abundant legal debate has swirled around the Griggs decision. The airport operators have pinned their hopes on the Dissenting Opinion by Justice Black, which maintained that the pervasive Federal scheme of regulated air transportation in the

^{57/} In Griggs the Supreme Court apparently recognized the authority of the FAA Administrator under the Federal Airport Act, 49 U. S. C. Sec. 1112(a)(2) to contribute 50% to 75% of the "allowable project costs" of an approved airport project under the Act, including "costs of acquiring land or interests therein or easements through or other interests in airspace..." 369 U.S. at 85-86. Nevertheless, the FAA Deputy General Counsel testified in the House Commerce Committee Hearings, that there was "a difference of opinion in the Agency whether the present Act would authorize us to contribute to the acquisition of pure noise-abatement easements. At the present time, we don't do it, and we don't think we should do it and we do not intend to ask Congress for the authority to do it." Hearings, p. 664. In all events, the FAA has declined to read "interests in airspace" as embracing noise damage claims. This situation was urged by the Petitioner, Port of Seattle, in its attempt to secure review by the U. S. Supreme Court, of the decision of the State Supreme Court of Washington in the Seattle-Tacoma airport litigation. (Petition for Writ of Certiorari, Port of Seattle v. Martin, Oct. term, 1964, p. 19.)

On the other hand, FAA has participated financially in the acquisition by the airport operator of noise-sensitive adjacent residential property, where the acquired area has been found necessary as additional "clear zone" under the Act (i.e., an approach area free of obstructions). E. g., the acquisition by Los Angeles International Airport of the Playa del Rey development, supra, p. 20.

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United States places the legal responsibility for damage from airport operations in the national Government. This viewpoint, the airport operators hope, will become the law when again the Court examines the issue.^{58/} Other legal writers and practitioners believe that the American high court was fully aware of the long-range implications of its holding, and knowingly chose to place the responsibility for meeting the economics of conforming the airport environment on the airport operator.^{59/}

The Extent of Financial Liability for Noise

Two things seem clear. First, the greater part of the airport operators' effort to secure Federal responsibility for aircraft noise on all fronts is attributable to a serious concern for the potential economic burden from the legal liability imposed by the Griggs decision.

^{58/} See Testimony of Leander Shelly, General Counsel, Airport Operators Council, Hearings, Airport Noise Problems, supra, n. 46, p. 660.

^{59/} See Testimony of Warren Christopher, Los Angeles, California, Hearings, supra, n. 46, p. 662.

Thus, the Griggs rule has been assailed as a "threat... to local governments"; it has even been hazarded that:

"...the liability imposed by the Griggs decision on airport operators may seriously undermine the financial structure of local government. Funds that might otherwise be used by local governments for school, hospital and highway construction must now be held as a reserve for potential liability".^{60/}

However, what stands out, upon examination, is that the apprehension of grave economic consequences from legal liability for noise damage is not borne out by actual experience.

One airport operator has said that those noise lawsuits already filed by airport neighbors in the United States "could amount to liabilities totalling billions of dollars".^{61/} The statement must be viewed as metaphorical. Not even if every pending suit in the United States were decided for the claimants -- and in the sum of awards sought by their complaints -- would the liability amount to "billions of dollars", or even one billion dollars. In fact, all the noise

^{60/} Goldstein, op. cit., supra, n. 2, p. 142.

^{61/} Report of the Jet Aircraft Noise Panel, p. 157. Even the Federal Aviation Agency has expressed concern as to the cost of noise judgements: "Thus the case law highlights the noise problem by making it expensive to airport owners and as a consequence to the industry as well". (Randall, "Possibilities of Achieving a Quiet Society", Ibid., p. 143).

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damage lawsuits resolved adversely to civil airport operators in the past 11 years (since comprehensive records have been kept) do not add up to even \$1 million.^{62/} They total less than one-half million dollars -- exactly \$470,334.^{63/}

Moreover, as noted by a former Deputy General Counsel of the Federal Aviation Agency,^{64/} a number of factors tend to lessen the exposure to liability of defendants of noise suits:

(a) As time passes, an increasing number of claims are becoming barred by statutes of limitations. The cause of action ripens, and the statute begins to run, on the day on which noise first becomes severe enough to impair the value of the subjacent property, not the day on which the property owner first becomes irritated or sensitive.

^{62/} See the analysis of damage cases in the United States by Lyman M. Tondel, Jr., "Noise Litigation at Public Airports", in the Report of the Jet Noise Panel, p. 123. The data has been brought up to date by Mr. Tondel in his companion paper to this paper for Committee 2, "Legal, and Related, Aspects of Airport Land Use Planning" (draft), p. 11.

^{63/} Ibid. Moreover, this sum includes a total of \$400,000 voluntarily paid by defendant Port of Seattle under a stipulated judgement, in the recent Seattle-Tacoma Airport cases (Martin v. Port of Seattle, No. 560219, Super. Ct., King Co., Wash., Nov. 24, 1965, and Aarhus v. Port of Seattle, No. 566353, Supr. Ct., King Co., Wash., Apr. 26, 1966). The total amount of awards adjudged against airport operators under contested trials would thus be less than \$100,000.

^{64/} James D. Hill, Liability for Aircraft Noise - the Aftermath of Causby and Griggs, XIX U. of Miami Law Review 27-29 (1964).

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(b) Under the Constitutional "taking" theory replied upon in nearly all noise suits, the cause of action belongs only to the property owner at the time of "taking". It does not "run with the land" automatically. This rule has operated to foreclose subsequent purchasers. 65/

(c) The generally recognized measures of damages tends to keep awards low, inasmuch as it is based on value at the time of the original taking, (not at the time of trial). Since most airports were originally built in agricultural areas, 66/ it is this value which must be paid for, not a subsequent residential use. 67/ In fact, the courts held that an aviation easement works no diminution in the value of agricultural property. 68/

65/ Highland Park v. United States, 162 F. Supp. 769 (Ct. Cl. 1958); Aaron v. United States, 311 F. 2d 798 (Ct. Cl. 1963).

66/ Hill, op. cit., p. 29.

67/ Jensen v. United States, 305 F. 2d 444 (Ct. Cl. 1962).

68/ United States v. 357.25 Acres, 55 F. Supp. 46 (W.D., La. 1944); and see Pope v. United States, 173 F. Supp. 36 (N.D., Tex. 1959).

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(d) Any reduced property value from noise of over flights is usually substantially off-set by the increased value of the property from being adjacent to an airport. In some instances there is no net diminution in value, and therefore no damages. 69/

(e) Under the rule followed by the Federal courts of the United States, and most of the state courts, a property owner is not entitled to recover for a "taking" of his property, unless the offending aircraft actually invades the airspace above his property. 70/

69/ Dick v. United States, 169 F. Supp; 491 (Ct. Cl. 1959); and see Walther, The Impact of Municipal Airports on Market Value of Real Estate in the Adjacent Areas, 22 The Appraisal J. 15 (1954); 20 J. Air L. & Com. 440 (1953).

70/ Batten v. United States, 306 F. 2d 580 (10th Cir. 1962); Pope v. United States, 173 F. Supp. 36 (H.D., Tex. 1959); Freeman v. United States, 167 F. Supp. 541 (W.D., Okla. 1958); United States v. 26.07 Acres, 126 F. Supp. 374 (E.D., N.Y. 1954). Contra: Martin v. Port of Seattle, 391 P. 2d 540 (Wash., 1964) cert. den., 379 U.S. 989 (1965); Thornburg v. Port of Portland, 233 Ore. 178, 376 P. 2d 100 (Ore., 1962); Schumann v. City of Jacksonville, 167 So. 2d 95, (Fla. 1966); Benitez v. Hillsborough City Aviation Auth. (No. 139928, Div. G., Cir. Ct. 13th Cir., Hillsborough County, Fla., Jan. 18, 1966).

Government Initiative in Noise Control Measures

In the United States, there has been a fundamental difference of view between Federal and local governments as to the jurisdictional responsibility for the noise problem.^{71/}

In addition to the desire to have Federal financial responsibility, airport operators have argued that it is essential there be uniformity of Governmental action through Federal responsibility.

At the same time, it has been recognized that airports cannot be treated "uniformly", in that each has its special local characteristics. For example, as reported in a Study for NASA of airport environs, people at Des Moines, Iowa Municipal Airport are apparently willing to live under conditions of noise exposure generally thought of as objectionable, having become accustomed to the noise environment and liking the neighborhood.^{72/}

^{71/} See, e. g., Report of the Jet Aircraft Noise Panel, p. 157.

^{72/} A Study of the Optimum Use of Land Exposed to Aircraft Landing and Takeoff Noise, National Aeronautics and Space Administration, Contractor Report CR-410 (Arde, Inc. & Town and City, Inc.), March, 1966, p. 43. The Des Moines reaction doubtlessly exists in other places. It would suggest that perhaps there should be a fourth element added to the conventional three-pronged approach of "(1) Noise Source, (2) Aircraft Operation, and (3) Land Use". The fourth might be: (4) Individual Adaptation.

The Congress appears to have taken the view until now that the noise problem belongs primarily to the local governments, at least until the Federal Government "occupies the field" under its commerce power. At the same time, the Congress has not moved to take Federal action. In the Report of the House Committee on Interstate and Foreign Commerce following its hearings on aircraft noise problems, the Committee concluded:

"Local government, be it city, county, or State, should explore the wisdom of the reasonable exercise of the police power to effectuate a reduction in the impact of aircraft noise upon persons and property in the community." 73/

Regarding the contentions of airport operators that the Congress should enact legislation to indemnify airport operators for litigation losses from noise suits, the Committee determined:

"Any enactment by the U. S. Congress to indemnify each and every airport operator throughout the United States of America against judgements which might be obtained or for moneys paid over to claimants in the settlement of claims alleged under the doctrine of the Griggs case would be impractical." 74/

73/ H. Rept. No. 36, 88th Cong., 1st Sess. (1963) p. 28.

74/ Ibid., p. 28.

The Committee then concluded:

"10. The Committee has no recommendation to make with respect to litigation between neighboring property owners and airport operators." ^{75/}

On the other hand, the Committee recommended that, if FAA-- upon re-study--should still conclude that it does not have present power ^{76/} to participate financially in the local acquisition of avigational easements, it should seek enlarged legislative authority. ^{77/} The FAA, while clearly yet of the view that it does not have such power, has not asked for enlarged authority in the three years since the issuance of the Report.

The Congressional Committee also found that if, in the estimation of the Federal Aviation Administrator, any inadequacy exists in his statutory authority to promulgate air traffic rules to alleviate aircraft noise, he should seek additional authority. ^{78/} It is apparent that the

^{75/} H. Rept. No. 36, 88th Cong., 1st Sess. (1963) p. 24.

^{76/} Under the Federal Airport Act, 49 U.S.C. 1112 (a) (II).

^{77/} H. Rept. No. 36, 88th Cong., 1st Sess. (1963), p. 24.

^{78/} Ibid. p. 28. (Somewhat anomalously, the Committee had already found as a fact that the FAA has such authority and had exercised it "with encouraging results," Findings 6.01 - 6.02, pp. 26-27).

Administrator has considered that he has adequate authority in this area.^{79/} Under Section 307 (c) of the Federal Aviation Act of 1958,^{80/} the FAA has therefore taken certain regulatory action to "protect persons and property on the ground" -- from aircraft noise. Thus, FAA has issued air traffic rules, requiring aircraft to climb as quickly as possible; to remain above specified heights as long as practicable on landing; and to use -- whenever possible -- preferential runways designed to route airplanes over relatively unpopulated areas.^{81/}

On the other hand, the FAA has not considered that it has the power to impose safety regulations under Title VI of the Act, in the

^{79/} Testimony of James E. Hill, Deputy General Counsel, FAA, Hearings Before the House Committee on Interstate and Foreign Commerce, 87th Cong., 2d Sess., 670-671; Abstract of testimony of Daggett Howard, General Counsel, FAA, Hearings Before the House Committee on Science and Astronautics, 86th Cong., 2d Sess., pursuant to House Resolution 133, (in House Report No. 2229, (Oct. 13, 1960), p. 47).

^{80/} 49 U.S.C. 1348 (c) (1964).

^{81/} Robert L. Randall, Deputy General Counsel, FAA, op. cit., supra n. 61, p. 144.

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interest of noise control.^{82/} As far back as the August, 1960 hearings before the House Committee on Science and Astronautics, FAA stated its need and support of such enlarged legislative authority.^{83/} But until recently, it had not sought such authority. The Science and Astronautics Committee recommended in its Report that (1) noise criteria be made a mandatory requirement of specifications for civil aircraft, and (2) that Congress amend the Aviation Act to delineate FAA responsibility for research and development relevant to "noise planning for civil aviation".^{84/} While the Commerce Committee made no exact recommendation, it similarly recommended that FAA should "assume the primary responsibility for the development of a valid measurement of aircraft noise annoyance in its administration of the Federal Aviation Act." ^{85/}

^{82/} Testimony of Daggett Howard, supra, n. 79, p. 47. Cf., the suggestion by Mr. Randall, op. cit., supra, n. 61, p. 144, that Section 312 (b) of the Federal Aviation Act (49 U.S.C. 1353 (b) (1964), authorizing the Administrator to undertake developmental work to improve aircraft and engines, might give the Administrator the power to regulate the source of noise (e.g., by certification of engine and airframe).

^{83/} Howard, op. cit., n. 82, p. 47.

^{84/} H. Rept. 2229, supra, n. 10, p. 51.

^{85/} H. Rept. No. 36, supra, n. 6, p. 28.

Proposed Federal Noise Legislation and Regulation

In the present Congress, several versions of a draft bill by the FAA have been introduced.^{86/} The bill would amend the Federal Aviation Act of 1958 to empower the Administrator to use his various certification powers under Title VI of the Act for the regulation of noise. The new section would involve a grant of authority to the Administrator to prescribe and apply aircraft noise control standards. In practical effect, the Administrator's existing safety regulatory powers under Title VI of the Aviation Act would be expanded so as to make aircraft noise control an integral part of each.

FAA apparently has its own doubts whether Congress will approve the legislation. FAA Deputy General Counsel, Robert L. Randall, has stated:

"The problems of expanding the Act in this area to protect the public from disturbance as well as danger may be considerable."^{87/}

^{86/} See S. 3591 by Senator Magnuson, Chairman of the Senate Commerce Committee, appended as Attachment D.

^{87/} Randall, op. cit., supra, n. 61, p. 144.

Mr. Randall refers to the Recommendations of the last Congressional Committee to examine into the aircraft noise problem, which concluded: 88/

"1. The physical creation of aircraft noise should be recognized as a scientific problem which cannot be resolved by legislative action."

"2. The effect of aircraft noise upon persons and property on the ground should be recognized as partially a physical and psychological problem, currently under intensive investigation by organized qualified groups, which cannot be resolved by legislative action;"

"3. The primary responsibility for research and development of noise suppression in the design of aircraft and powerplants should continue to rest with the airframe manufacturers and the powerplant manufacturers."

Nevertheless, FAA has stated its support of public regulation as essential to the "solution" of the aircraft noise problem. 89/ Significantly to the jurisdictional issue as between the Federal and local governments, however, FAA has proposed that public regulation "at the Federal, State and local levels" be pursued. 90/ However, FAA has not disclosed what sort of State regulation it might have in mind. Nor has it been made clear

88/ H. Rept. No. 36, 88th Cong., 1st Sess., p. 27.

89/ Randall, op. cit., supra, n. 61, p. 144.

90/ Ibid.

as of this time how local regulation in these areas could be meshed with Federal regulations. ^{91/}

If the certification regulation contemplated by the FAA's bill is to be legally supportable, as reasonable to the legislative purpose, some reconciliation will have to be made with the expressed Congressional objectives and the FAA's own regulatory position.

As applied to the stated FAA purpose of certification of aircraft, for example, it is difficult to see how a regime of both Federal and local laws could be accommodated. Indeed, it is the FAA's position in its current litigation against a local maximum noise level ordinance that the local measure is invalid because it invades the field of air traffic control and air safety which the Federal Government has totally preempted. ^{92/}

^{91/} Other than the suggestion (made in connection with proposed joint regulations relating to compatible land use, not, apparently, certification of engine and frame), that Federal regulation need not be exclusive (citing Huron Portland Cement Co. v. City of Detroit, 362 U.S. 440 (1960), for the holding that local regulation under the police power may be sustained if not in conflict with the prevailing Federal regulation). Randall, op. city., supra, n. 61, p. 144. Of course, the Federal regulation involved in Huron was not comprehensive or exclusive. Moreover, no necessity for uniform regulation existed (362 U.S. at p. 444).

^{92/} American Airlines, et al and the Administrator of the Federal Aviation Agency v. the Town of Hempstead, et al. (U.S. Dist. Ct., E.D. N.Y., 63 Civ. 1280).

Read literally, the FAA's bill suffers another difficulty in its apparent equating of noise control with safety regulation.^{93/} As Mr. Randall himself has pointed out, serious problems are raised whenever safety functions may be compromised by regulations having a distinct and separable purpose.^{94/} The noise abatement objective in this instance is separable from safety. In fact, the Congress has already determined, after extensive hearings, that there is no evidence of any permanent physical injury to persons, or extensive physical damage to property, as a direct result of noise created by civil transport aircraft,^{95/} and thus no safety factor involved.

In the matter of conflicts with safety considerations, the FAA has already experienced serious difficulties with its existing noise

^{93/} An otherwise identical bill (Reid, H. R. 17351) adds the phrase "consistent with the primacy of air safety" to make this point clear.

^{94/} Randall, op. cit., supra, n. 61, p. 144.

^{95/} H. Rept. 36, 88th Cong., 1st Sess. (1963), p. 25. And see Odell, op. cit., supra, n. 44, p. 4.

"regulations" promulgated under its air traffic control authority.^{96/}

The Congressional posture obviously presents a dilemma for airport operators. They are strongly committed to Federal legislation, but to legislation which will exercise Federal pre-emption of jurisdiction and legal responsibility for aircraft noise. On the other hand, they are also strongly committed to Federal regulation of aircraft manufacturers and aircraft operators for noise abatement.

From FAA's preliminary descriptions of the legislation, it is apparent that the FAA does not regard it as pre-empting jurisdiction and responsibility for aircraft noise. However, it is clear that the FAA does intend to certificate aircraft for noise, granted the requisite statutory authority.

The difficulty for the airport operator apparently is in deciding whether to exercise concurrent regulation. For, if the Federal Government does not pre-empt the field, the airport operator continues

^{96/} E.g., the charges in "The Airways Traveler," ("official publication of the Airways Club, Inc.,"), September, 1963, that the FAA noise abatement regulations require airline pilots "to climb their aircraft at speeds less than recommended maneuvering speeds". Cf. the statement of Captain Charles H. Ruby, President, Airline Pilots Association, that power reduction on takeoff can be dangerous when done by the larger aircraft, because they are "generally loaded to capacity with passengers and fuel for longer flights." (Washington Post, April 18, 1966).

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to be confronted with the apprehension of heavy economic losses from legal liability for noise. On the other hand, there is an apparent "eat your cake and have it too" philosophy among local governments. Thus, one major airport operator has suggested that:

"An immediate benefit of the Federal Government's preemption of legal responsibility for the presence of unacceptable jet engine noise levels would be the removal of current inhibitions, imposed by legal considerations, which today prevent a more forthright local approach to this problem."^{97/}

This would appear to say that local operators have omitted to regulate under their acknowledged police power, out of a desire to avoid liability, but that if freed from liability, they would proceed to regulate noise. The ellipsis is plain. Only by Federal preemption would the local government be freed from liability.

But with Federal preemption, it would be precluded from regulating.

In the conduct of this "button-game", some local governments have reversed their regulatory approach completely. Whereas certain municipalities formerly had ordinances prescribing aircraft approach and departure procedures for noise control purposes, following the Griggs decision, the ordinances were repealed and replaced by ordinances prescribing that such approach and departure

^{97/} Fox, op. cit., supra, n. 71, p. 158.

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should be in accordance with that prescribed by "the Federal agency having control of the navigable airspace". The theory was that the municipality did not want a property-holder suing, on the claim that the city had "directed" the flight path of the aircraft.

In this see-saw exercise by local and Federal governments there has been an effort, on both sides, to assert just enough jurisdiction to regulate noise, but not enough to incur the legal liability for the result.

One of the unanswered questions behind the present proposed Federal legislation is whether those Congressmen^{98/} who have sponsored the bills are actually prepared to have the Federal government assume the potential economic commitment

^{98/} Except for the Administration's bill sponsored by Senator Magnuson in senatorial courtesy as Chairman of the Senate Commerce Committee, all of the pending 41 bills dealing with aircraft noise have been introduced by Congressmen in whose home district there is a major jet airport. Some of the bills are duplications. But of the 41 total, 24 are from New York, 6 from Chicago, 5 from Los Angeles and San Francisco and the remaining 6 are from other localities.

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envisioned by the airport operators. The Executive Department in the United States has apparently accepted that result.^{99/}

An equally important question, from the viewpoint of the prospective regulated industries, if Federal regulation of aircraft noise is to be enforced, is the extent to which local regulation will be precluded. One of the principal justifications advanced for Federal regulation has been "uniformity". As it happens, despite the open invitation from the Congress to local governments to regulate noise locally through the use of the police power, only two municipalities have undertaken to do so. A proliferation of conflicting local aircraft noise ordinances might well have served to accelerate the enactment of a uniform Federal scheme for noise abatement. From the viewpoint of the aircraft operator, there cannot be much question as to the preference for a single Federal source, over the potential onus of multifarious local regulations.

Particularly would this be the case with FAA regulation by standard certification of the aircraft, as opposed to the

^{99/} Report, Jet Aircraft Noise Panel, Office of Science and Technology, p. 6.

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establishment of local maximum noise levels on the ground for take-offs and landings. It is the latter type regulation which has been attempted in the United States by local authorities, in part because of the inherent paucity of regulatory methods open to political subdivisions of limited jurisdiction.

Experience in the United States
with Regulation of Maximum Noise Levels

Two municipalities in the United States by local law, and one airport by operating condition, have attempted to establish a maximum permissible noise level applicable to aircraft operating so as to cause noise within the prescribed area in excess of the stipulated level. The Town of Hempstead, New York in 1963 adopted an amended noise ordinance, providing in substance, with respect to aircraft, that it shall be unlawful for any person, whether as owner, lessee or charterer, pilot or copilot, to operate or cause to be operated any aircraft which shall create a noise within the Town of Hempstead exceeding the limited noise spectra set forth in two tables incorporated in the ordinance.^{100/} A fine of \$100 was established for each offense.

^{100/} See the Hempstead Amended Ordinance, No. 25, Attachment "C" hereto.

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Additionally, it was provided that any violation shall constitute disorderly conduct (a misdemeanor), and any person violating the ordinance shall be a disorderly person. Under New York Penal Law, the penalty for the crime of disorderly conduct is imprisonment for not more than six months, or a fine not exceeding \$50, or both, for each such violation.

Hempstead borders New York's Kennedy International Airport, and is an independent township, numbering 27 separately incorporated villages and the City of Long Beach, New York within its boundaries. The take-off routes for Kennedy runways 13 R and 13 L and approach to Runways 31 R and 31 L lie directly over Hempstead. Other air routes for Kennedy landings and take-offs also are over portions of Hempstead. Nine airlines operating from Kennedy, and the Air Line Pilots Association, all joined by the Administrator, FAA as intervenor, filed separate suits against the Town of Hempstead, its Supervisor, Councilmen and Town Attorney, seeking a

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declaratory judgement of unconstitutionality and invalidity of the ordinance, and an injunction against its enforcement.^{101/}

The plaintiffs have maintained that, even in the absence of a direct conflict with existing Federal regulations, the Hempstead ordinance is invalid because it invades the field of air traffic control and air traffic safety which the Federal Government has totally preempted. Among the arguments made by plaintiffs was that commercial aviation requires national uniformity of legislation, pointing out that within a very few minutes, an aircraft on its way to Europe from Kennedy would pass successively over eight different towns, within five townships, each of which could have differing noise ordinances.^{102/}

The testimony of the Administrator (Halaby) before the House Hearings on Aircraft Noise was referred to:

"It is very difficult for a crew to have one kind of procedure at one airport and another at another,

^{101/} American Airlines, et al v. Town of Hempstead, Adm'r. FAA, Intervenor (USDC, E. D., N. Y. 63 Civ. 1280); The Port of New York Authority and the Administrator of the Federal Aviation Agency, Intervenor v. Town of Hempstead, et al (USDC, E.D., N. Y. 64 Civ. 45); Charles H. Ruby, et al v. Town of Hempstead (USDC, E. D., N. Y. 63 Civ. 1316).

^{102/} Plaintiffs' joint "Reply, and Supplemental, Memorandum in Support of Motion for Preliminary Injunction", dated May 14, 1964, supra, n. 100.

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a third at a third, and some of these crews are called upon within the space of a single mission to land at five or six airports, maybe even more. ^{103/}

To Hempstead's contention that the ordinance differs from earlier ordinances, such as that of the Village of Cedarhurst, another municipality proximate to Kennedy, which attempted to ban flights below 1,000 feet over the village, in-^{104/}validated by the Federal courts as an invasion of the Federally preempted field of air traffic control, the plaintiffs (including intervenor FAA) replied by showing that: (a) FAA had been given noise abatement powers by Congress (in Section 307(c) of the Aviation Act) and had exercised such powers extensively and effectively, including Kennedy Airport; and (b) even if not, the Hempstead ordinance, although couched in terms of noise abatement and levels, actually invades the field of air traffic control, and in effect prescribes a minimum altitude for^{105/} flight.

^{103/} Najeeb E. Halaby, Administrator, FAA, Hearings before Subcommittee on Aircraft Noise Problems, of the House Committee on Interstate and Foreign Commerce, 86th and 87th Cong., 505 (1963).

^{104/} Allegheny Airlines v. Village of Cedarhurst, 238 F. 2d 812 (2d Cir. 1956).

^{105/} Plaintiffs' Reply, supra, n. 102, pp 17, et seq.

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Finally, the plaintiffs argued that the case of Huron Portland Cement Co. v. City of Detroit^{106/} (upholding a local anti-smoke ordinance in the face of Federal maritime and boiler safety regulation on the Great Lakes) does not ameliorate the foregoing conclusions, in that the Detroit ordinance did not seek to prevent all smoke, but only to require installation of modern smoke control equipment -- in contrast to the Hempstead ordinance, which the expert testimony showed could not be complied with by the addition of any known additional mechanical equipment or changing aircraft design characteristics. Also the U.S. Coast Guard, the Federal regulatory agency involved, did not object to the enforcement of the Detroit ordinance, feeling that it was not in conflict with the Federal regulation -- in contrast to the FAA, which vigorously opposes the Hempstead ordinance as an unwarranted interference with air traffic control and air safety.

The plaintiffs in the Hempstead case, in fact, contended that any attempt by law to require an airplane in flight to cut back on the noise being received on the ground is bound to encroach

^{106/} 362 U. S. 440 (1960).

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upon air traffic control, inasmuch as the only means available for compliance by the aircraft are: (a) increase of altitude, (b) change of flight pattern, or (c) reduction of power.

In support of their argument for an injunction against enforcement, the plaintiffs showed that individual fines would run into the tens of thousands of dollars per day, and that the practical effect of the ordinance would be to close the operation of Kennedy International Airport. The case has been heard, and is awaiting decision of the Federal Court in New York.

A similar ordinance to the Hempstead measure was enacted by the town of Park Ridge, Illinois on January 7, 1964.^{107/} Both of the measures appeared, from the consideration preceding their adoption, to have been prompted by the recommendation of the Harris Report (that municipalities make use of the local police power to abate aircraft noise).

Hearings were held on the proposed Park Ridge ordinance before its adoption. The Mayor of Park Ridge -- a residential subdivision adjoining Chicago's O'Hare International Airport -- stated that the action was made necessary by Congress' failure to act and the failure and refusal of the FAA to prescribe "remedial" flight

^{107/} See the "Park Ridge Noise Abatement Ordinance", Attachment "E" hereto.

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paths (i.e., paths over some other township). The standard of noise level incorporated in the Park Ridge ordinance is the db (C) scale.^{108/} The Park Ridge ordinance purports to establish a maximum permissible noise level, but prescribes in greater detail than the Hempstead ordinance how the prohibited "unusually loud noise", as defined in the ordinance, shall be measured and classified. In general, the ordinance purports to prohibit noises exceeding 87-db, as measured on the weighted "C" scale. Fines of \$10 to \$200 for each offense (each day being a separate offense) are prescribed, and the penalties apply to servants and agents as well as to the owner or operator of the aircraft. Enforcement of the Park Ridge ordinance is understood to be suspended pending the outcome of the Hempstead litigation.

In connection with the adoption of the ordinance, Mayor John Overbeck of Park Ridge was quoted in an interview on Radio Station WIND, Chicago, as follows:

"If the function of the control tower is to operate the Airport in an efficient manner, they cannot be

^{108/} For comparisons of relative intensities of common sounds on the db scale, and in absolute relationship, see Attachments "A" and "B" hereto.

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criticised, as I believe they are operating the Airport efficiently. In FAA's order of priority, however, noise control is about tenth down the list, and it is clear that the FAA has a conflict of interest in attempting to operate the airport efficiently and in alleviating noise. "

If, as appears to be the case, Mayor Overbeck had reference to safety of air traffic control measures, as a principal element of efficient operation of the Airport, he unwittingly put his finger on the essence of the matter.

In addition to the Hempstead and Park Ridge ordinances, which appear to be the only two such local laws establishing a maximum permissible aircraft noise level in the United States, the Port of New York Authority has established an airport regulation at New York's John F. Kennedy International Airport, under which "permission is denied" for jet aircraft to use JFK Airport, except upon demonstration that they are capable of taking off from the airport in such way as not to produce noise in surrounding communities exceeding 112-PNdb (Perceived Noise Decibels).^{109/} The "PNdb" as a subjective measure of annoyance on the ground

^{109/} See the "New York International Airport Conditions for Operation", Attachment "G" hereto.

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was developed for the Port of New York Authority by the consulting firm of Bolt, Beranek and Newman. The United States airlines using Kennedy do not recognize "PNdb" as a valid standard of measurement for regulatory enforcement, nor do they concede the legal authority of the Port of New York Authority to impose its "regulation" on certificated air carrier operations at Kennedy Airport, even as to take-offs. ^{110/} However, in view of the substantial compliance with the regulation which results from company-imposed noise abatement procedures, together with FAA operating requirements, they have not challenged the regulation. The Port of New York Authority confirms that the degree of compliance from this is better than 99%. ^{111/}

The legal theory of the PNYA regulation was explained by Sidney Goldstein, General Counsel, to the Harris Committee

^{110/} PNYA apparently recognizes that it has no legal authority to impose a maximum permissible noise level on landings at Kennedy. Odell, "Jet Noise at John F. Kennedy International Airport": Report of the Jet Noise Panel, p. 163; Goldstein, op. cit., supra, n. 2, p. 132.

^{111/} Odell, "Development and Enforcement of Noise Standards", Paper for Conference Committee 4 (draft), p. 7.

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noise hearings as a power "inhering in the very nature of the property ownership and control".^{112/} Mr. Goldstein emphasized that the Port Authority was not asserting a legislative power, but a common-law power.^{113/}

There appears to be no assurance from anything publicly stated by either the Port of New York Authority or the Federal Aviation Agency that the PNYA "112-PNdb" regulation would be abandoned if the FAA were to commence certification of aircraft for maximum noise levels.

The Kennedy Airport situation demonstrates the impracticality of attempts to regulate the amount of noise by law. The Port of New York Authority, as owner and operator of the Airport, has established a legal regulation to limit the amount of noise on takeoff to a fixed value, measured on the ground (viz., 112 "PNdb"). This is stated to be for the benefit of surrounding communities. One of the surrounding communities

^{112/} Letter, Sidney Goldstein to Chairman Oren Harris of the House Interstate and Foreign Commerce Committee, October 30, 1959.

^{113/} Testimony of Sidney Goldstein, General Counsel, Port of New York Authority, Hearings, House Interstate and Foreign Commerce Committee, Aircraft Noise Problems, December 6, 1962, p. 657.

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-- Hempstead -- has passed its own law to limit the amount of noise from aircraft operating at Kennedy, with a different -- and more stringent ^{114/} -- limit.

Aircraft operators are thus now required, by law, to comply with two conflicting regulations setting a maximum permissible noise level. If there were to be superimposed on these conflicting local regulations a third-level of conflicting regulation by the Federal Aviation Agency as the national authority, compliance would become impossible.

Plainly the situation is not to the Port's liking. In fact, the Port has stated that if the Hempstead law were enforced, it would have the practical effect of closing down the Kennedy Airport.^{115/} The Port has therefore filed suit to invalidate and enjoin the enforcement of the Hempstead ordinance.^{116/}

^{114/} Although the Hempstead limit is expressed as a sound spectrum, the expert testimony in the Hempstead litigation shows that for more than 90% of the aircraft taking off from Kennedy the limit could not be complied with. (Odell Affidavit, Port of New York Authority v. Hempstead, *supra*, n. 101.) The PNYA 112-"PNdb" regulation is complied with by 99% of aircraft (*supra*, p. 57, n. 111).

^{115/} Wiley Affidavit, Port of New York Authority v. Town of Hempstead (USDC, E. D., N. Y. 64 Civ. 45).

^{116/} Ibid.

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Interestingly enough, the argument advanced by the Port against the Hempstead regulation is that it conflicts with existing Federal regulations which have totally^{117/} pre-empted the fields of air traffic control and safety, and that commercial aviation requires "national uniformity" of regulation".^{118/} Apparently, the Port's regulation also conflicts with the existing Federal regulations. Presumably the Port would argue, however, that its own noise limit is a "landlord's condition", and not "legislation".^{119/} In any event, the Kennedy regulation has not been challenged in court.^{120/}

To date, so far as known, no other airports or municipalities in the United States have adopted regulations

^{117/} A former FAA Deputy General Counsel points out that, nationally, the flight control exercised by FAA is actually limited, applying to only 272 of 8,084 airports (Hill, op. cit., supra, n. 64). However, this is substantial, in terms of the identity of the airports, since it includes virtually all of the major airports.

^{118/} Reply, and Supplemental, Memorandum in Support of Motion for Preliminary Injunction, May 14, 1964, in Port of New York Authority v. Town of Hempstead, supra, n. 115.

^{119/} Supra, pp. 57-58.

^{120/} Supra, p. 58.

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establishing maximum noise limits.^{121/} Several states, municipalities and airports have considered the adoption of such limitations, and have rejected them, primarily on legal grounds: viz., that they would be invalid and unconstitutional on the grounds urged by the Port of New York Authority in the Hempstead case.^{122/}

In light of the general renunciation by State and local governments of local regulation of noise limits, because

^{121/} Some have issued policy statements in the nature of "letters of intent", e. g., Resolution No. 2059 of the City of Los Angeles, pertaining to sound levels of the anticipated supersonic aircraft ("SST"). See Attachment "F".

^{122/} See, for example, (a) Legal Opinion No. 748, Legislative Counsel, State of California, Sacramento, Calif., dated November 27, 1959, that neither the State nor its counties have the power to regulate because of the Federal preemption, citing Allegheny Airlines, et al. v. Town of Cedarhurst, 132 F. Supp. 871 (1955), and the State statute recognizing exclusive Federal power in the field, State Aeronautics Commission Act (Pt. 1, Sec. 21,001, et seq Div. 9, P. U. C.), and particularly Sec. 21,240 (P. U. C.) that, "This state recognizes the authority of the Federal Government to regulate the operation of aircraft and to control the use of the airways", and Section (subd. (b), 21,403, P. U. C.) that, "The right of flight in aircraft includes the right of flight within the zone of approach of any public airport without restriction or hazard" (emphasis supplied); (b) to the same effect, see Legal Opinion, County Counsel, County of Los Angeles, California, dated November 17, 1959, also citing Cedarhurst; and (c) accord: Legal Opinion, City Attorney, Inglewood, California, dated December 29, 1959.

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of the assumed preemption by the Federal Government (a position adhered in by the Federal Aviation Agency),^{123/} the public policy enunciated by both the FAA and Congress becomes enigmatic.

The Congressional Committee which investigated aircraft noise problems for four years concluded and recommended that regulation should be by local governments through exercise of their police power.^{124/} And the FAA has declared the aircraft noise problem can be solved only by "public regulation at the Federal, State and local levels".^{125/} Presumably, the FAA reference is to local regulation of land use, which is essentially within local purview in the United States.

^{123/} The Federal Aviation Agency has intervened in the Hempstead litigation, opposing the Hempstead ordinance on essentially the same grounds as the airlines and the Port of New York Authority, supra, n. 101.

^{124/} Report of the Harris Committee, supra, n. 6, p. 28. N. B. the apparent inconsistency of other Recommendations of the Committee, however, e. g., Nos. 11 and 12, calling on the FAA to regulate in at least the air traffic area, and in its "administration of the Federal Aviation Act".

^{125/} Randall, op. cit., supra, n. 61, p. 144.

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The pending Congressional legislation takes on added perspective against this background.^{126/} So far as appears, the Administration bill, drafted by the Federal Aviation Agency, does not in terms purport to preempt the field of aircraft noise regulation. Among the 40-odd bills (which include some duplications) are various approaches to the aircraft noise problem, from the Federal point of view.^{127/} But none, in terms, seems to preempt the field of aircraft noise regulation. It will remain for Congressional

^{126/} In the absence of Federal regulation, various local governments have regulated other forms of noise. See, for example, Intro. 5309, adopted in the New York Legislature in 1965, amending the New York Vehicle and Traffic Law so as to impose a "Motor Vehicle Noise Limit", 88-db or more on the A scale, measured at 50 feet. As of September 14, 1966 only six arrests had been made under the Act, and there has been no court test of the measure. The statute appears to have had the support of the American Trucking Associations, Inc. (the association of the regulated motor carriers of the United States). A study by ATA, Inc. called, "The Noise Trucks Make", September, 1964, describes the noise level limit of 125-sones for new trucks at factory, sponsored by the Automobile Manufacturers Association. The study compares as a basis for enforcement, truck noise measurements made in the field, both in terms of the "sone", as used by the manufacturers, and the db(A) scale, proposed for enforcement.

^{127/} See the summary analysis of the pending bills in the United States Congress, attached as Attachment "H".

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hearings on the bills to determine whether this was intended, in tacit recognition of the difficulties of uniform regulation where each airport is different.

The Federal Aviation Agency has indicated on numerous occasions that it would not seek legislative authority to certificate aircraft for noise until there is first developed an acceptable noise unit of measurement to be used for such certification. With the introduction of S.3591 by Senator Magnuson on July 11, 1966, the FAA now seeks such Congressional authority. But there has been no public statement by the FAA that an adequate noise criterion has yet been developed. All indications are to the contrary.

Thus, when there was recently reported the possible adoption by the International Organization for Standardization of "Recommendation No. 879", incorporating a procedure using "PNdb" and the "Composite Noise Ratio" ("CNR"), among others, and describing the procedures as "the approach utilized in the United States", the FAA publicly stated that the U. S. Department of Defense and the Federal Aviation Agency did not intend to adopt that system, or any other, as a national standard in the United States without "extensive

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further analysis to determine the most suitable system as an operational method of aircraft noise measurement" and that adoption of an international standard at this time would be premature.^{128/}

Whatever additional powers the Congress may delegate to FAA, it is apparent that the Agency has been placed in a tenuous position by the House Commerce Committee's invitation to local governments to use their police power to regulate aircraft noise. Now that some local governments have done just that, the FAA is faced with the dilemma of deferring to local control or challenging the local regulation in court, as an invasion of Federal authority.

The Agency seems to be doing both. FAA joined with the Port of New York Authority (owner-operator of Kennedy Airport) in litigating the Hempstead,

^{128/} D. D. Thomas, Deputy Administrator, Federal Aviation Agency, letter dated February 18, 1966, to the American Standards Association. The Department of Defense position in agreement with FAA was confirmed by separate letter of March 10, 1966, signed by J. A. McCrary, Department of Defense Liaison Officer to the Federal Aviation Agency.

New York ordinance as an interference with Federal air traffic and safety regulations in the New York area. ^{129/}

But, anomalously, FAA has apparently accepted the Port Authority's recent use of the Port's airports noise regulation to vitiate an FAA operational safety notice at New York's LaGuardia Airport. ^{130/}

True, the legal theory of the Port of New York Authority regulation is that it is not "legislation", but

^{129/} Supra, p. 52.

^{130/} An FAA Notice of August 8, 1966 (citing increased safety as its primary objective) lifted a prior New York FAA restriction against jet operations on Runway 4/22 at LaGuardia Airport. The Port Authority contended that, under its airport rules and regulations (adopted for noise control) (see Attachment "G"), the Port in April 1964 had granted permission to operate jets into LaGuardia with a prohibition against using Runway 4/22. When jet operators began using Runway 4/22 pursuant to the FAA's Notice of August 8, 1966, the Port filed in New York State Supreme Court for an injunction, claiming that such operations violated its noise regulation and thereby constituted a trespass, which could result in the Port being sued for damages from noise. The runway was built in part with Federal funds granted by FAA under a contract requiring the Port to keep the runway open for public use. Nevertheless, and even though the FAA Notice rests on safety, as opposed to the Port's regulation being for noise alleviation, the FAA to this time has not challenged the Port regulation. One of the airline operators has done so, in an injunction suit filed in the Federal Court for New York. Port of New York Authority v. Eastern Air Lines, et al (E. D., N. Y.) 66 Civ. 867 on petition for removal from the New York State Supreme Court for Queens County, No. 216-66, filed September 7, 1966.

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rather a "condition" for the use of the airport imposed by the Port, as owner-landlord, on user-lessees.^{131/} If these hypotheses are valid, local governments will not need to resort to their constitutional "police power" to impose maximum allowable noise limits. Their airport departments may simply regulate by airport lease-contract.^{132/}

Such a course, followed by all -- or even some -- of the major airport operators of the United States, would vitiate the FAA's air traffic and safety regulatory authority^{133/} just as surely, and perhaps far more effectively, legally, than duly legislated ordinances or airport regulations.

^{131/} Supra, p. 58.

^{132/} It has been suggested that the FAA might maintain a contractual cause of action against airport operators, such as the Port Authority, which have received Federal airport assistance grants from FAA under the Federal Airport Act, 49 U. S. C. 1101, and in which a "sponsor's agreement" is signed, obligating the recipient to keep the airport open to public use. It is difficult to see how FAA could prove or recover damages or secure specific performance of such an obligation, even assuming that the local political unit is answerable.

^{133/} See "Airplane Noise: Problem in Tort Law and Federalism" 74 Harv. L. R. 1581, at p. 1605 (1961).

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In the bargain, airport operators, as landlords, might vitiate as well any competing noise ordinances of municipalities within the approach area of the airport: e. g., the Port Authority attack upon the Hempstead, New York ordinance.^{134/} It is perhaps relevant that the Port Authority justifies its airport take-off limitation, not on the basis of protecting the airport, but "to avoid noise levels intolerable to the people in the communities surrounding the Airport".^{135/} (Hempstead might well ask if it is included.)

Even that outcome is to be preferred, it would seem, to the chaos which would result from all of the municipalities in the approach area of a major airport adopting competing noise limits.^{135A/} There is some

^{134/} Supra, p. 51.

^{135/} Press Release, Port of New York Authority, August 12, 1966.

^{135A/} Serious disparity in noise level standards between municipalities might well be an unconstitutional burden on interstate commerce. See Southern Pacific Co. v. Arizona, 325 U. S. 761, 773-75 (1945); Horan Portland Cement Co. v. City of Detroit, 362 U. S. 440, 446-448 (1960).

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hint of this potential legislative warfare in the Hempstead litigation, where the Plaintiffs and FAA maintain that the Hempstead noise limit is:

"nothing more than a method for moving the aircraft noise from the Town of Hempstead to the Borough of Queens; it produces no overall noise abatement"^{136/}

In this situation, the saving grace has been the self-restraint -- or possibly inertia in some cases -- of the municipalities and airport operators involved.^{137/}

^{136/} "Plaintiffs' and Intervenor's Comments Upon Defendants' Proposed Counter-Findings of Fact", dated May 2, 1966, American Airlines, Inc., et al; the Port of New York Authority; and Charles H. Ruby, et al, and The Administrator of the Federal Aviation Agency, Intervenor, v. Town of Hempstead, et al (USDC, E. D., N. Y.) 63 Civ. 1280.

^{137/} Of the three maximum noise level regulations described, only the Port of New York Authority condition is being enforced at this time. Enforcement of both the Park Ridge and Hempstead ordinances has been suspended by informal agreement pending the Hempstead litigation. However, Park Ridge claims that there is substantial compliance with its ordinance in actual experience, 95%, based on continuing monitoring (Christian Science Monitor, February 12, 1966; Cong. Record 2976, February 16, 1966). Although Hempstead agreed to non-enforcement pendente lite, it thereafter attempted to rely on non-enforcement as an argument against plaintiffs' alleged irreparable injury in seeking an injunction. However, Hempstead's counter-claim against the airlines plaintiffs manifests an intention to enforce. ("Reply, and Supplemental, Memorandum in Support of Motion of Preliminary Injunction, dated May 14, 1964, pp. 10, 52-53, American Airlines, Inc., et al v. Town of Hempstead, et al, USDC, E. D., N. Y., 63 Civ. 1280). The Port Authority's enforcement is not 100%, although "Terms and Conditions are so phrased as to require 100-percent compliance with the 112 PNdb limit; and we actually experience an overall compliance rate of better than 99%" (Odell, "Development and Enforcement of Noise Standards", paper for Committee 4 (draft), p. 7).

Legal Standards in Enforcement of Maximum Noise Levels

In the United States, regulatory action by governmental entities -- local, State or Federal -- must conform to requirements of the United States Constitution. Local and State regulation must also meet the requirements of the applicable State constitution.

Maximum aircraft noise levels imposed by regulation would have to meet these constitutional tests.^{138/}

All three of the existing maximum noise limit regulations in the United States consist of a specified value of noise not to be exceeded by an aircraft in flight, but measured on the ground. The

^{138/} The FAA specifications for the proposed U.S. supersonic commercial transport (the "SST") are prospective in nature, but would establish a present maximum permissible noise level for the aircraft for design purposes. As originally proposed, in the FAA "Request for Proposals for the Development of a Commercial Supersonic Transport", August 15, 1963, the specifications called for a maximum on noise resulting from take-off, of less than 112-PNdb at a point on the ground one statute mile from the departure end of the runway, on a line which is an extension of the center-line of the runway, and for any gross take-off weight (assuming a 10,500 ft. runway and a standard day).

In the July 30, 1966 revised official RFP, it was provided that the SST should be capable of operating with a noise level, acceptable to the public, with prescribed maximums (for maximum gross weights and standard day), not necessitating undue maneuvering or critical speed limiting maneuvers: (1) approach, at one mile from runway threshold, 109-PNdb; (2) during take-off roll, at 1500-ft to either side of the runway center-line - 116 PNdb; (3) Take-off, at 3 miles from brake release - 105 PNdb; The noise levels in PNdb's should be progressively less as the outward distance from points (1) and (3) above increases.

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two municipal ordinances carry penalties of money fines for each violation, and the Hempstead ordinance would appear, under New York State law, to involve possible jail sentence. The fines, ^{139/} cumulatively, would be substantial.

The Port of New York Authority regulation in itself prescribes no fines or other penalties. Enforcement has been carried out by court action to secure an injunction against operation of the violating flights. Until the recent suits at LaGuardia Airport, the Port on only one occasion, in October, 1960, had sought court enforcement against an aircraft operator. Upon a request for deferment by the air carrier to provide opportunity to conform with the regulation, the suit was dismissed in December, 1960. ^{140/}

^{139/} See Ex Parte Young, 209 U.S. 123 (1908), commenting upon the cumulative effect of fines and jail sentences. In the Hempstead litigation, it was demonstrated by Plaintiffs that the potential daily fine on the aircraft operators was \$30,800. At this rate, it could cost aircraft operators more than \$11 million per year in fines to operate over Hempstead.

^{140/} Press Release, Port of New York Authority, August 12, 1966.

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Although the Port Authority regulation carries no money penalties, direct and indirect economic costs^{141/} of compliance to the air carriers operating into the New York area's three airports is substantial. It is estimated by the U.S. air carriers that the annual costs of compliance with the 112-PNdb regulation at Kennedy Airport to the U.S. carriers alone, is more than \$4 million. One carrier estimated its individual economic penalty in complying with the Kennedy regulation alone, to amount to 5% of the gross annual revenue from the operation of each aircraft involved.

Discussed earlier were the legal arguments by which the FAA, the Port Authority and the airlines seek invalidation of the Hempstead limit, particularly in the invasion of a Federally pre-empted field of regulation.^{142/} Of course, there is no prima facie unconstitutional conflict between a local ordinance imposing a maximum noise level and Federally-established patterns of flight for safety purposes.^{143/} Even if there is no conflict in purpose,

^{141/} In off-loading and reduced loading for weight reduction, operational delays in schedule performance, fuel penalties from avoidance maneuvers and circumnavigation, etc. For an excellent analysis of these factors, see "Jet Aircraft Noise Abatement" by J.E. Frankum, Vice President, Transportation, Trans-World Airlines, in Report of the Jet Noise Panel, Office of Science and Technology, p. 99.

^{142/} Supra, p. 51.

^{143/} Supra, pp. 51-54. See Lucey, "Legal Aspects of the Airplane Noise Problem," Handbook of Noise Control (Harris, 1957), pp 5-6.

however, as between FAA traffic rules designed to promote safety and a local noise ordinance designed to protect tranquility, the local ordinance may yet be in conflict if the cost of compliance is very substantial in comparison to the local interest in abating the noise. ^{144/} Such a regulation might be held to impose a constitution-^{145/} ally unreasonable burden on interstate commerce.

In the Hempstead litigation, the Plaintiffs demonstrated that there is not only no reasonably inexpensive modification of the aircraft or the method of its flight to make compliance possible within the Huron doctrine, but that it is impossible for aircraft presently in use to be so modified. ^{146/}

For this reason, the Hempstead ordinance was further attacked as being designed not with the objective of alleviating noise exposure by reasonable standards susceptible of compliance, but

^{144/} "Airplane Noise: Problem in Tort Law and Federalism," 74 Harv. L.R. 1581 at p. 1601 (1961).

^{145/} Huron Portland Cement Co. v. City of Detroit, 362 U.S. 440, at 446-448 (1960).

^{146/} "The Supreme Court, 1959 Term," 74 Harv. L. R. 81, 134-56 (1960).

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actually to prevent aircraft from flying over Hempstead (thereby necessitating flight over other communities, with a transfer of the ^{147/} noise to them).

It does appear that compliance with the Hempstead ordinance may not have been intended. Expert evidence of test measurements showed that normal operation of trucks, buses and trains would violate the limit, even measured at 100 feet, and that even the ambient noise level in the areas of public ^{148/} streets exceeded the limits.

To contrast, the Mayor of Park Ridge, Illinois in an interview stated that the basis for the adoption of the 87-db to 95-db limit in the Park Ridge ordinance was preliminary "sound truck" tests (i.e., measurements) indicating that those levels could be

^{147/} Reply, and Supplemental Memorandum in Support of Motion for Preliminary Injunction, dated May 14, 1964, American Airlines, Inc. et al v. Town of Hempstead, et al (USDC, E.D., N.Y.) 63 Civ. 1280.

^{148/} Odell Affidavit, Port of New York Authority v. Town of Hempstead, et al, (USDC, E.D., N. Y.) 64 C 45, pp. 3-6.

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reasonably complied with, if the airlines "exercise due care". ^{149/}

The Mayor maintained, without submitting any evidence or explanation, that the most inconvenience to be suffered by the aircraft operators would be possible delays on take-offs in the summertime of from "two to three minutes". ^{150/} In the council hearings on the ordinance, it was also stated that, in preliminary test measurements of aircraft in flight from the adjacent Chicago O'Hare International Airport, 90% of those measured were under the prescribed 95-db maximum permissible level.

The 112-PNdb Kennedy limit was assertedly arrived at by setting that level which would be equalled or exceeded by 25% of the propeller aircraft in use at Kennedy at the time (1958, then Idlewild International Airport), measured at 2-1/2 miles from start of take-off roll (about a mile from the airport). ^{151/} What this explanation does not say is on what legal basis, if any, the regulation

^{149/} Mayor John Overbeck, Interview, Radio Station WIND, Chicago, February 27, 1964.

^{150/} Ibid

^{151/} Kryter, "Evaluation of Psychological Reactions of People to Aircraft Noise," in Report of the Jet Aircraft Panel, Office of Science and Technology, p. 21, citing Study, Staff - Bolt, Beranek & Newman, Inc. of Boeing 707-120 jet airliner and of large conventional propeller-driven airlines (sic), submitted to the Port of New York Authority, 111 Eighth Ave., New York, N. Y., October, 1958.

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was geared to a compliance factor of only 75% of piston aircraft. Why not 100%? Or why not 50%? The base seems to be purely arbitrary.

Curiously, Dr. Kryter, as one of the principals in the development, raises the question himself by arguing that "a significant number of" people apparently regard the 112-PNdb level as too high, in light of the noise suits against the airports, both before and after the jets.^{152/} But if the principals were aware of this fact at the time, and if the numbers of such adversely affected persons is truly "significant", this acknowledgement merely casts doubt both as to the method and the validity of the regulatory standard used.

Dr. Kryter's comment indicates, however, no matter what level is established as the maximum permissible, there will be persons who are not satisfied. In attempting to settle upon an acceptable level, attention has been given by planning agencies to the

^{152/} Kryter, "Evaluation of Psychological Reactions of People to Aircraft Noise," in Report of the Jet Aircraft Panel, Office of Science and Technology, p. 21, citing Study, Staff - Bolt, Beranek & Newman, Inc. of Boeing 707-120 jet airliner and of large conventional propeller-driven airlines (sic), submitted to the Port of New York Authority, 111 Eighth Ave., New York, N. Y., October, 1958.

general size of the geographical area to which it is desired to afford protection. For land use planning purposes only, the FAA in October, 1964 distributed for information a study entitled, "Land Use Planning Relating to Aircraft Noise."^{153/} The document advanced the concept of the "Composite Noise Ratio" ("CNR"), which purported to be a refinement of the PNdb to reflect community reactions to noise. However, it did not gain acceptance in the aviation community. The National Aircraft Noise Abatement Council, on behalf of the aircraft manufacturers, the airport operators, airport managers, airline pilots and air carriers took strong exception to the study and to its assumptions and conclusions.^{154/}

^{153/} Bolt, Beranek & Newman, Inc., Report No. 821.

^{154/} See National Aircraft Noise Abatement Council, "Analysis and Comment on Proposed 'Planning Guide' for Aircraft Noise in Residential Areas" dated April 25, 1963; and "Bolt, Beranek & Newman Report No. 821, Discussion Outline". The NANAC documents detail the deficiencies and errors in the Guide, particularly in the area of predicted community reaction to noise. It is pointed out, for example, that application of the 115-CNR standard to the New York airports would embrace a land reach of from 9 to 11 miles off the end of runways. The Port of New York Authority itself, although having originally sponsored the PNdb application for its airport regulations, has joined in repudiating the Guide.

One objection by the aviation community was that, while described as strictly a planning document for prospective use, the study posed the danger of its misuse in providing maximum noise levels over a designated area measured on the ground, for present flight regulatory purposes, or even aircraft certification. Another apprehension expressed was that the document could be misused to the detriment of the aviation community by claimants in noise suits. A good many of the fears have come to pass.^{155/}

For equating a proposed maximum level to a geographical area to be protected, it is not essential to have "countours" on the ground. Adequate determinations of geographical areas of protection have been accomplished in a number of ways. In the early stages, airports relied upon the elementary "clear zone" of two-miles reach beyond the end of runways, as recommended in the "Red Book".^{156/} More recently, the area embraced within the FAA's "TSO N-18" and (FAR) Part 77 have been utilized. While all of these criteria were designed to provide clearance for lateral

^{155/} Cf. Schumann v. City of Jacksonville. 167 So. 2d 95, 9 Avi. 17, 216.

^{156/} Report of the President's Airport Commission, Gen. J. H. Doolittle, Chairman, May 16, 1952.

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obstructions, manifestly their application usually results in protecting the area for noise abatement purposes as well.

In some instances, depending upon the built-up character of the airport, the reach of these obstruction guides is not sufficient for noise protection. In such cases, various adequate methods have been developed for defining the reach of a larger area for noise protection, without the necessity for resorting to the unsatisfactory criteria based on supposed "community reaction".^{157/}

As determined by various airports, the general extent of the area within which compliance would be expected under prescribed maximum noise levels falls within approximate ranges: Los Angeles -- an area 4-miles long and 1-mile wide, under the approach path;^{158/} New York -- 5-miles from

^{157/} For example, see "Environs Study and Plan" for the Detroit Metropolitan Wayne County Airport, Detroit Metropolitan Area Regional Planning Commission, by Polysonics, Inc., Washington, D. C., dated May, 1964.

^{158/} Metropolitan Area Airport, National Area Plan, 1961, City of Sacramento, California, p. 4.

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the beginning of take-off roll to the nearest town;^{159/}
 Tulsa -- (on the basis of a 90-db area) estimates an affected
 area of 2.1 miles from the end of the runway.^{160/}

From the viewpoint of enforcement, generally, it is enlightening to note the difficulties of measurement, and identification for purposes of evidence of violation, on the part of the Port of New York Authority, as the only political entity in the United States presently attempting to enforce a maximum noise level. The Port Authority acknowledges that "a definite spread of several decibels" may result from any specific operation^{161/} and that accurate identification of aircraft violation is the most difficult and important aspect of enforcement, any omissions or errors being irremediable by any checking of operational records after the fact.^{162/} Equally notable is the Port's position that any

^{159/} Port of New York Authority, A New Major Airport for the New Jersey - New York Metropolitan Area, Report on Preliminary Studies, January 14, 1960, p. 24.

^{160/} Tulsa Metropolitan Area Planning Commission, "Metropolitan Tulsa Airports and their Relationship with Surrounding Land Uses", June, 1960.

^{161/} Odell, op. cit., n. 6, p. 7.

^{162/} Odell, op. cit., supra, n. 6, pp. 7-8.

"improvement" of the PNdb scale (e.g., for duration, pure tones, and other factors) as proposed by numerous interested groups, will make the Port's enforcement procedure highly complex. ^{163/}

Regarding reasonable criteria for regulations enforcing maximum permissible noise levels, it appears to be recognized that maximum specifications for landing are impractical. ^{164/}

From the viewpoint of the aircraft operator compliance with a regulation fixing a maximum limit by an aircraft in flight as delivered on the ground is impractical in all events. First, it is usually impossible for the pilot to know when he is within the corporate limits of a municipality. ^{165/}

^{163/} Odell, op. cit., supra, n. 6, pp. 7-8.

^{164/} German Workers' Society for the Control of Noise, "Aircraft Noise", March, 1966, pp. 4-5; Odell, op. cit., n. 6, p. 8.

^{165/} Jerome E. Wood, Affidavit, Hempstead case, Neither the Hempstead nor the Park Ridge ordinance depends upon the aircraft flying over the corporation limits of the municipality. However, for noise violating the ordinance from outside the community, enforcement difficulties would be presented, as is apparent from the Town's Answer in the Hempstead case.

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Attempted enforcement of an ordinance against an aircraft in flight exceeding a measured noise limit on the ground would seem to be in violation of the "due process" clause of the United States Constitution.^{166/}

Particularly in the case of laws imposing penalties, it is well settled that the terms must be sufficiently explicit to inform those who are subject to it what conduct on their part will render them liable to its penalties. The United States Supreme Court has stated,

"... a statute which either forbids or requires the doing of an act in terms so vague that men of common intelligence must necessarily guess at its meaning and differ as to its application, violates the first essential of due process of law."^{167/}

The standards for certainty in penal statutes are higher than those depending primarily upon civil sanctions for enforcement.^{168/} In the case of the existing municipal ordinances limiting noise as received on the ground, it is

^{166/} U. S. Constitution, amend V (Federal Government) and amend XIV, Sec. 1 (State and local governments).

^{167/} Connally v. General Construction Co., 269 U. S. 385, 391 (1926).

^{168/} Winters v. New York, 333 U. S. 507, 513 (1948).

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clear that the terms by which the new offense is created do not enable those subject to its reach to know when their conduct will render them subject to fines and other penalties. Enforcement of such an ordinance would be contrary to the Fourteenth Amendment of the United States Constitution.^{169/}

The Constitutional due process requirement is the more demanding when, as with the existing municipal ordinances, the proscribed conduct involves no offense against moral standards.

"When a statute is directed against conduct which offends accepted moral standards, and particularly when the moral offense is heinous, ambiguities do not count against its validity as much as they do when the proscribed conduct has no ethical significance . . . "^{170/}

Similarly, the technical character of the offense, whether classified as a felony, misdemeanor, offense or

^{169/} See: Lanzette v. New Jersey, 306 U.S. 451 (1939); United States v. Cohen Grocery Co., 255 U.S. 81 (1921); Cramp v. Board of Public Instruction, 368 U.S. 278 (1961); International Harvester Co. v. Kentucky, 234 U.S. 216 (1914).

^{170/} United States v. Dennis, 183 F. 2d 201, 215 (1950), aff'd 341 U.S. 494 (1951).

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traffic violation, is not material to the safeguards to which the defendant is entitled.^{171/}

Nor is it relevant that, as contended by Hempstead, the ordinance may not actually provide for imprisonment. No distinction with respect to the due process requirement is drawn between a statute providing for imprisonment in one form or another, and a statute merely imposing fines.^{172/}

Another problem of enforcement in the case of a limit measured on the ground is "where to measure". If accomplished by monitoring, the choice is between a small number of selected sites or an area basis, with a large number of monitors.^{173/} If enforcement rests on

^{171/} People v. Gilbert, 12 N. Y. S. 2d 632 (1939); Lippert v. State, 207 Misc. 632, 139 N. Y. S. 2d 751 (Court of Claims 1955) (dictum), both involving the "offense" of disorderly conduct.

^{172/} Winters v. U. S., supra, n. 168. Winters has been followed in this respect in North American Van Lines v. United States, 243 F. 2d 693 (6th Cir. 1957) (dictum); and also in Werner v. City of Knoxville, 161 F. Supp. 9 (E. D., Tenn. 1958).

^{173/} Odell, op. cit., supra, n. 29, pp. 6-7.

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monitoring at selected, fixed positions, the question is raised whether the means employed for enforcement are reasonably related to the statutory purpose, or obversely, whether the statutory objective is intended to benefit certain persons or areas at the expense of others.

For example, if the monitor is established at Point "A" at the corporate limit of the municipality closest to the airport, the result may be to cause the aircraft to reduce noise at that point, so as to be in compliance, but thereafter increase noise on the ground at a point "B", well past "A", in trying to retrieve air speed and rate of climb.

John R. Wiley, Director of Aviation of the Port of New York

Authority has stated the matter this way:

"It is readily apparent that a thrust reduction at the edge of a community results in lower noise on the ground at that point, than does continued application of take-off thrust... The question arises in the 'downstream' portion of the flight path where the aircraft at reduced thrust will obviously be at a lower altitude than one at take-off or climb power. Also, even though the aircraft at low thrust may produce less noise at that location, it is argued by some that application of climb power at some point may create a new focal point for complaints..."^{174/}

^{174/} Wiley, op. cit., supra, n. 20, p. 5.

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A relevant Constitutional prohibition in the United States is that against the denial of equal protection of the laws.^{175/} Although reasonable classifications of persons affected under police regulations are permissible, it has been held that discriminations in their application are not to be supported by mere fanciful conjecture, and cannot stand as reasonable if they offend the plain standards of common sense.^{176/}

Finally, to justify the exercise of police power, "it must appear... that the means are reasonably necessary for the accomplishment of the purpose, and not unduly oppressive upon individuals".^{177/} This has been described as the "classic statement" of "the familiar standard of 'reasonableness'".^{178/} A municipal ordinance designed to alleviate noise by eliminating air commerce must surely fall.

^{175/} United States Const., amend XIV, Sec. 1.

^{176/} Hartford Steam Boiler Inspection-Insur. Co. v. Harrision, 301 U. S. 459 (1937).

^{177/} Lawton v. Steele, 152 U. S. 133, 137 (1893).

^{178/} Goldblatt v. Town of Hempstead, 369 U. S. 590, 594 (1962).

Conclusion

Cooperative programs involving the Federal and local governments of the United States, working with the airport community (including airports, pilots, manufacturers, and airlines) have made significant progress in alleviating jet aircraft noise in the United States. Future planning, and systems-type approaches to the problem, utilizing joint input from Government and industry, holds the promise of even greater advances.

Even with anticipated traffic increases, cooperative and voluntary programs of noise alleviation can generally be expected to provide more satisfactory results than comprehensive regulation through maximum aircraft noise levels fixed by law.

While Federal initiative in coordinating a systems approach to the overall aircraft noise problem is desirable, Governmental action should not take the form of legislating maximum noise levels for individual aircraft in flight, as monitored on the ground. Such regulations in practice have proved

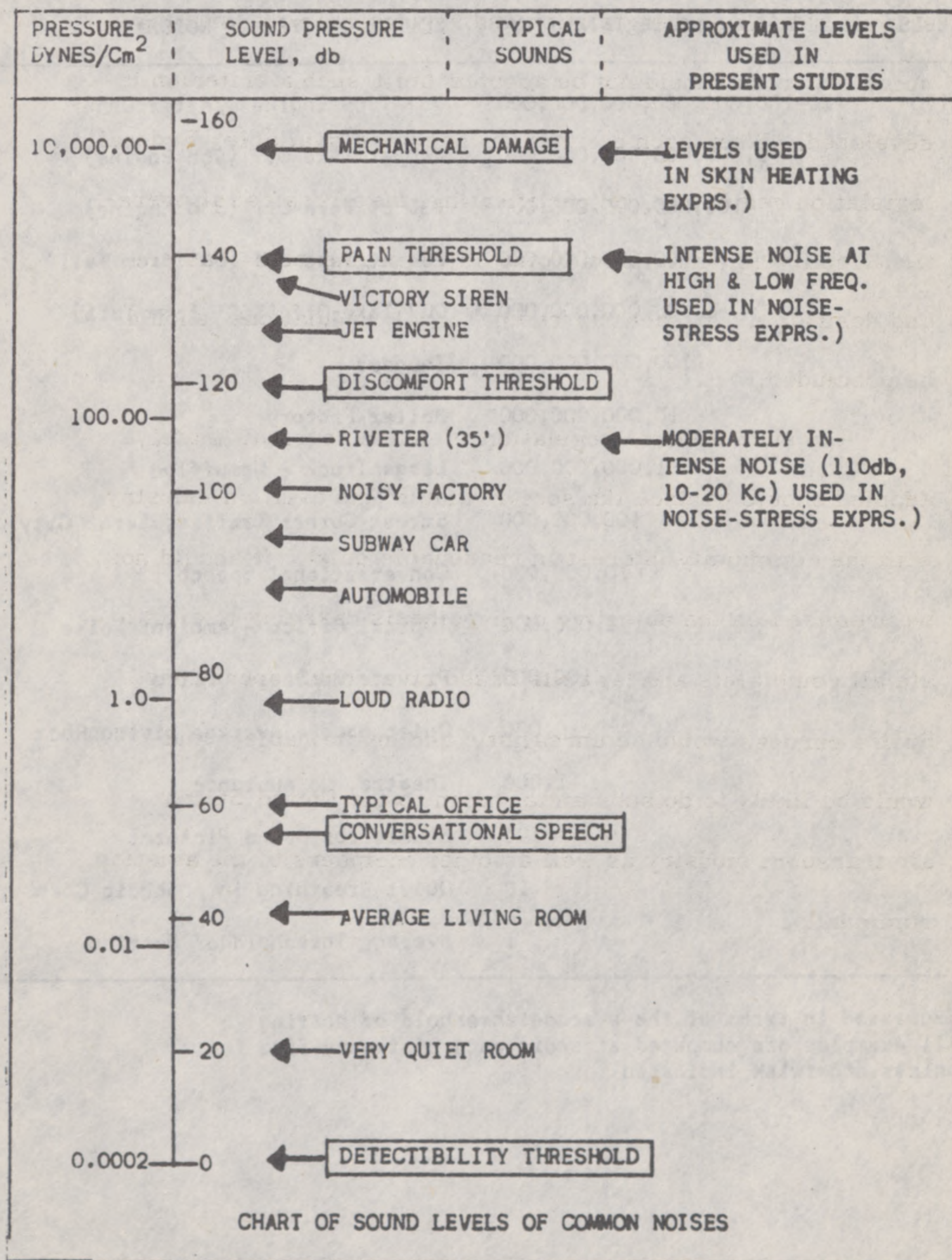
difficult of formulation and enforcement, and raise serious economic, legal and social questions.

Development of adequate and accepted noise criteria is necessary to support a wide range of Governmental and private actions. Additional legislation and regulations necessitating a noise criterion should not be adopted until such a criterion is developed. When such a criterion becomes available, Federal legislation regulating, or certificating, the aircraft as an operational entity for maximum noise level seems both feasible and desirable. In such an event, local regulations should be precluded.

Any such Federal regulation of noise level ultimately adopted should balance the social value of the aviation industry with the community interest in reasonable quiet. It should not be premised on the objective or hypothesis of trying to eliminate all complaints and lawsuits based on aircraft operations. Such a purpose would be unrealistic and unattainable, and would be likely to do substantial harm to the United States air transport industry as well as other members of the aviation community.

Attachment A

FIGURE 2



NOISE: ITS EFFECT ON MAN AND MACHINE

FIGURE 3

Relative Intensities of Various Common Sounds Expressed
in Terms of Decibels and in Terms of Their Absolute
Relationship

DECIBELS	DEGREE OF NOISE INTENSITY*	SOURCE OR TYPE OF NOISE**
160-170	10-100,000,000,000,000,000	J57-Type Engine w/Afterburner
150	1,000,000,000,000,000	A4D at Take-Off (J65 Engine)
140	100,000,000,000,000	F3D at Take-Off (J34 Engine)
130	10,000,000,000,000	F84 at Take-Off (80' from Tail)
120	1,000,000,000,000	DC7 Take-Off (150' from Tail)
110	100,000,000,000	Thunder
100	10,000,000,000	Boiler Factory
90	1,000,000,000	Large Truck - Unmuffled
80	100,000,000	Street Corner Traffic, Large City
70	10,000,000	Conversational Speech (3')
60	1,000,000	Typical Office - Ambient Noise
50	100,000	Private Business Office
40	10,000	Quiet Home - Average Living Room
30	1,000	Theatre, No Audience
20	100	Studio for Sound Pictures
10	10	Quiet Breathing in Anechoic Chamber
0	1	Average Threshold of Hearing

* Expressed in terms of the average threshold of hearing

** All examples are computed at a distance of twenty-five feet unless otherwise indicated

NOTICE OF AMENDMENT OF UNNECESSARY NOISE
ORDINANCE (NO. 25) IN RELATION TO THE
REGULATION AND LIMITATION OF SOUND FROM
AIRCRAFT AND OTHER MECHANICAL DEVICES.

THE TOWN BOARD OF THE TOWN OF HEMPSTEAD, PURSUANT TO
ARTICLE 9 OF THE TOWN LAW OF THE STATE OF NEW YORK, HAS ORDAINED
AND ENACTED THE FOLLOWING AMENDMENT TO THE UNNECESSARY NOISE
ORDINANCE (NO. 25) OF THE TOWN OF HEMPSTEAD TO TAKE EFFECT
ACCORDING TO LAW.

ARTICLE II

REGULATION OF AND LIMITATION UPON
TRANSIENT SOUND FROM AIRCRAFT IN
FLIGHT AND ANY AND ALL OTHER
DEVICES OF A MECHANICAL NATURE.

1. Definitions of words and phrases used in this ordinance.

(a) "Person":- Includes any individual, firm, association or corporation, whether such person be the owner, lessee or charterer, his or its pilots or co-pilots as to aircraft, and any individual firm, association and corporation, its servants, agents or employees as to any other sound producing device or mechanism.

(b) "Noise":- Noise is any undesired sound. By extension, noise is any unwarranted disturbance such as a substantial increase in the ambient noise caused by but not limited to an aircraft flying overhead.

(c) "Ambient Noise":- Ambient noise is the all-encompassing noise associated with a given environment, being usually a composite of sounds from many sources, near and far.

(d) "Bel":- The bel is a unit of level when the base of a logarithm is 10. Use of the bel is restricted to levels of quantities proportional to power.

(e) "Decibel":- The decibel is one-tenth of a bel and is a unit of level when the base of the logarithm is the tenth root of ten, and the quantities concerned are proportional to power.

(f) "Spectrum":- A spectrum is a function of time and is a description of its resolution into components, each of different frequency and usually of different amplitude and phase and is also used to signify continuous range of components usually wide in extent within which waves have some specified characteristics such as "audio-frequency spectrum" and is also applied to functions of variables other than time.

(g) "Sound Pressure Level":- The sound pressure level, in decibels, of a sound is 20 times the logarithm to the base 10 of the ratio of the pressure of this sound to the reference pressure, which reference pressure must be explicitly stated.

(h) "Band Pressure Level":- The band pressure level of a sound for a specified frequency band is the sound pressure level for the sound contained within the restricted band. The reference pressure must be specified.

(i) "Cycle":- A cycle is the complete sequence of values of a periodic quantity that occur during a period.

(j) "Frequency":- The frequency of a function periodic in time is the reciprocal of the primitive period. The unit is the cycle per unit time and must be specified.

(k) "Microbars":- A microbar is a unit of pressure commonly used in acoustics and is equal to 1 dyne per square centimeter.

(l) "Sound-Level Meter":- A sound-level meter is an instrument including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of noise and sound levels in a specified manner.

(m) "Sound Analyzer":- A sound analyzer is a device for measuring the band-pressure level or pressure spectrum level of a sound as a function of frequency.

(n) "Duration of Noise":- For the purpose of this ordinance, the duration of noise shall be the period of time for which the noise exceeds any given level without interruption.

(o) "Transient Noise":- Any noise having a duration of one minute or less shall be considered a transient noise and the limits of Table I of this ordinance shall apply.

(p) "Steady Noise":- Any noise having a duration in excess of one minute shall be considered a steady noise and the limits of Table II of this ordinance shall apply.

NOTE: All technical definitions are in accordance with American Standard S1.1-1960 entitled "Acoustical Terminology".

2. No person shall operate or cause to be operated any mechanism or device (including but not limited to airplanes) which shall create a noise within the Town of Hempstead exceeding the limiting noise spectra set forth in Tables I and II as follows:

TABLE I

LIMITING NOISE SPECTRUM
FOR TRANSIENT NOISE

<u>BAND PRESSURE LEVEL</u> <u>DECIBELS RE 0.0002 MICROBARS</u>	<u>OCTAVE BAND CENTER FREQUENCY</u> <u>CYCLES PER SECOND</u>
92 - - - - -	63
87 - - - - -	125
79 - - - - -	250
72 - - - - -	500
66 - - - - -	1000
60 - - - - -	2000
54 - - - - -	4000
52 - - - - -	8000

TABLE II
LIMITING NOISE SPECTRUM
FOR STEADY NOISE

<u>BAND PRESSURE LEVEL</u> <u>DECIBELS RE 0.0002 MICROBARS</u>	<u>OCTAVE BAND CENTER FREQUENCY</u> <u>CYCLES PER SECOND</u>
72 - - - - -	63
67 - - - - -	125
59 - - - - -	250
52 - - - - -	500
46 - - - - -	1000
40 - - - - -	2000
34 - - - - -	4000
32 - - - - -	8000

3. The noise shall be measured at an altitude not exceeding 100 feet above sea level.

4. If any clause, sentence, paragraph, section or part of this article shall be adjudged by any Court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the remainder of this article but shall be confined in its operation to the clause, sentence, paragraph, section or part thereof directly involved in the litigation in which such judgment shall have been rendered.

5. Penalties:- Any person violating any provision of this article shall be liable to a penalty not exceeding One Hundred (\$100.00) Dollars for each offense and a violation of this ordinance or any part thereof shall constitute disorderly conduct and any person violating the same shall be a disorderly person.

6. This article shall become effective in accordance with the provisions of Section 133 of the Town Law of the State of New York.

Dated: Hempstead, New York
November 19, 1963.

PALMER D. FARRINGTON
Presiding Supervisor of the Town
of Hempstead, Nassau County, N.Y.

NATHAN L. H. BENNETT
Town Clerk of the Town of
Hempstead, Nassau County, N.Y.

89TH CONGRESS
2D SESSION**S. 3591**

IN THE SENATE OF THE UNITED STATES

JULY 11, 1966

Mr. MAGNUSON (by request) introduced the following bill; which was read twice and referred to the Committee on Commerce

A BILL

To amend the Federal Aviation Act of 1958 to authorize aircraft noise abatement regulation, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That the Federal Aviation Act of 1958, as amended (49
4 U.S.C. 1301), is further amended by adding a new section
5 611 as follows:

6 “Aircraft Noise Control and Abatement

7 “(a) The Administrator is empowered to prescribe and
8 amend standards for the measurement of aircraft noise and
9 to prescribe and amend such rules and regulations as he may
10 find necessary to provide for the control and abatement of
11 aircraft noise, including the application of such standards,

2

1 rules, and regulations in the issuance, amendment, modifica-
2 tion, suspension, or revocation of any certificate authorized
3 by this title.

4 “(b) In any action to amend, modify, suspend, or re-
5 voke a certificate wherein violation of aircraft noise stand-
6 ards, rules, or regulations is at issue the certificate holder
7 shall have the same notice and appeal rights as are contained
8 in section 609, and in any appeal to the Civil Aeronautics
9 Board, the Board shall consider the aircraft noise violation
10 issues in addition to the safety and public interest issues as
11 provided in section 609.

12 “(c) The authority vested by this section in the Ad-
13 ministrator and the Civil Aeronautics Board shall be trans-
14 ferred to and vested in the Secretary of Transportation and
15 the National Transportation Safety Board, respectively, on
16 the effective date provided by the Act creating a Department
17 of Transportation for the transfer to the Secretary of func-
18 tions of the Federal Aviation Agency and the Civil Aero-
19 nautics Board; however, such transfer shall take effect on
20 the date of enactment of this Act if by virtue of the creation
21 of a Department of Transportation the transfer to the Secre-
22 tary of functions of the Administrator and the Civil Aero-
23 nautics Board has become effective.”

NOISE ABATEMENT ORDINANCE

BE IT ORDAINED by the City Council of the City of Park Ridge, County of Cook, and State of Illinois, as follows:

1. The following conduct, acts, and conditions are hereby declared and defined to be a nuisance and when committed, performed, permitted to exist, created, or permitted to be created by any person, firm, association or corporation, are hereby declared to be unlawful and prohibited, which nuisance so declared, defined, prohibited are the following:
 - A. The making and creating of an unusually loud noise as heard, measured, registered, observed, or recorded within the territorial limits of the City of Park Ridge in manner as described in Paragraph 2 hereof.
 - B. The operation of any vehicle, machine or device which makes or creates an unusually loud noise as heard, measured, registered, observed or recorded within the territorial limits of the City of Park Ridge in manner as described in Paragraph 2 hereof.
 - C. The operation of any aircraft which makes or creates an unusually loud noise as heard, measured, registered, observed or recorded within the territorial limits of the City of Park Ridge in manner as described in Paragraph 2 hereof, provided however, that in those areas within the territorial limits of the City of Park Ridge, over, upon, and in which easements or other vested interests have been acquired by purchase or agreement permitting thereon and thereover the flight of aircraft irrespective of noise, nuisance or damages to such described servient areas, the presence of such unusually loud noise affecting only such areas shall be permitted and exempted from the operation of this Ordinance.
2. For the purpose of determining and classifying any noise as an unusually loud noise herein declared to be unlawful and prohibited, the following tests and measurements shall be applied and be controlling:
 - A. The noise shall be heard, measured, registered, observed or recorded within the territorial limits of the City of Park Ridge on ground level at least 75 feet from the source of the noise at a place in any public street which is built up with structures devoted to business, industry or dwelling houses situated at intervals of less than 100 feet for a distance of a quarter mile or more.
 - B. The noise shall be measured, registered, observed or recorded on a decibel meter of standard design and quality such as General radio Model 1551B operated on a "C" weighting net work, calibrated according to standards prescribed and provided by the Acoustical Society of America.
 - C. A noise heard, measured, registered and recorded, as in subparagraphs A and B above described, more than 87 decibels in intensity shall be and is hereby declared to be an unusually loud noise and is prohibited, provided however, that if the said noise is made or created by an aircraft in flight over that certain portion of the territorial limits of the City of Park Ridge hereinafter defined and described as an airport runway extension, such noise so heard, measured, registered and recorded as in subparagraphs A and B above described of more than 95 decibels in intensity shall be and is hereby declared to be an unusually loud noise and is prohibited.
 - D. As used in subparagraph C above, an airport runway extension is defined as a rectangular strip of land 1200 feet in width and five miles in length at the end of and adjoining an existing runway of O'Hare International Airport, the longitudinal centerline of which rectangular strip of land is

the centerline as extended of such existing runway on which it adjoins.

3. Any person, firm, association or corporation violating the provisions of this Ordinance shall be fined not less than Ten (\$10.00) Dollars nor more than Two Hundred (\$200.00) Dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense. Where the act charged to be a violation or the act which is the causation of the violation is committed in whole or in part by a person acting as an employee, representative, agent or officer of the owner or operator of the vehicle, aircraft, or device, the operation or maintenance of which is the causation of said violation then and in that event such employee representative, agent or officer as well as such owner or operator shall be held liable for such violation.

BE IT FURTHER ORDAINED, by the City Council of the City of Park Ridge, that this Ordinance shall be in full force and effect immediately upon its passage and approval according to law.

Adopted by the City Council of the City of Park Ridge, Illinois,

this 7th day of January, A.D., 1964.

VOTE: AYES 10 Ald. Miller, Barzditis, Gorman, Groover, Cole, Peterson, Conway,
Nelson, Lester, Whitlock
NAYS 1 Ald. Gordon
ABSENT 1 Ald. Goll

Approved by me this 7th day of

January, A.D., 1964

/s/ John H. Overbeck, Jr.
Mayor

Attest:

/s/ Paul S. Badger
City Clerk

T. D. DANNENBRINK
SECRETARY
 #1 WORLD WAY
 LOS ANGELES INTERNATIONAL AIRPORT
 LOS ANGELES 48, CALIFORNIA
 Telephone: 640-2250 or 6260

SAMUEL WM. YORTY Mayor

RESOLUTION NO. 2059

WHEREAS, the President of the United States has announced that the Federal Government, through the Federal Aviation Agency, will participate in the development of a supersonic transport; and

WHEREAS, Pan American World Airways, Continental Air Lines, and certain other United States flag carriers have ordered or expressed an interest in the British/French Concorde transport; and

WHEREAS, this Commission is cognizant of the serious noise and community relations problems in the vicinity of the airports occasioned by the present-day subsonic jet transport;

NOW, THEREFORE, BE IT RESOLVED that the Board of Airport Commissioners of the City of Los Angeles does hereby urge and request that those in a position of authority and policy decision on the development of the supersonic transport direct their efforts so that this new family of supersonic aircraft will:

1. Be able to operate from the existing and currently planned civil airports
2. Require no greater runway lengths and/or clear zones for landing and take-off than present subsonic jet transports
3. Produce sound levels under the approach and departure flight paths of the airports that are less than the current jet subsonic transports
4. Produce sound levels within the airport environment from flight operations, ground, and maintenance operations that are compatible with the comfort, health, and welfare requirements of all persons within this area. This includes air terminal areas, parking lots and maintenance areas.

Resolution No. 2059

- 2 -

5. Be able to accept inlet and exhaust suppression devices that are attached or placed in position during ground maintenance run-up operations

BE IT FURTHER RESOLVED that this Commission will place operating restrictions on supersonic transport operations at Los Angeles International Airport which will control the noise levels from this aircraft unless the following operating sound levels are achieved in the aircraft design:

1. Take-off sound levels parallel to the runway at a measurement distance of 1400 feet parallel to the runway centerline shall not exceed 120 perceived noise decibels (Pndb.)
2. The take-off sound level shall not exceed 112 Pndb. at a point on the ground three miles from the start of the take-off roll on a line which is a prolongation of the centerline of the runway
3. Approach sound levels shall not exceed 120 Pndb. at a point on the ground 4000 feet from the landing threshold of the runway; and
4. Be able to operate with effective ground suppression devices during ground maintenance operations

BE IT FURTHER RESOLVED that the Secretary of this Commission be, and he hereby is, directed to forward a copy of this Resolution to the Administrator of the Federal Aviation Agency, the Air Transport Association of America, Senator Thomas Kuchel, Senator Clair Engle, Senator A. S. "Mike" Monroney and Congressman Oren Harris.

oOo

I hereby certify that the foregoing is a true and correct copy of Resolution No. 2059 adopted by the Board of Airport Commissioners at a special meeting held Wednesday, September 25, 1963.

T. D. Dannenbrink
T. D. Dannenbrink - Secretary
BOARD OF AIRPORT COMMISSIONERS

NEW YORK INTERNATIONAL AIRPORTCONDITIONS FOR OPERATION

No jet aircraft may take off at an air terminal without permission.^{1/}

Takeoffs on any runway will be permitted only if they are so planned and conducted in the airport that the noise level of 112 PNdb as measured on the ground in the communities shown on Chart No. NYA-5967 will not be exceeded. When aircraft weight, wind, temperature and other operational data as set forth in the approved airplane flight manuals, route manuals, and the pilots operating manuals are such that a takeoff planned in accordance therewith will produce a higher noise level than 112 PNdb measured at such communities underlying the flight path such takeoff will not be permitted.^{2/}

^{1/} PNYA Rules and Regulations for Air Terminals, As Revised 4/1/66, Section II, Aircraft #15.

^{2/} Resolution Adopted at Special Meeting, Operation Committee, (PNYA), 4/29/59. (H. Hearings, Aircraft Noise Problems, Sept. 7, 1957 - Dec. 6, 1962, p. 23).

PENDING NOISE BILLS - 89TH CONGRESSI. Administration Bills

H. R. 15875 (Rosenthal - 6/22/66)
 H. R. 15876 (Addabbo - 6/22/66)
 H. R. 15970 (Pucinski - 6/27/66)
 H. R. 16171 (Staggers - 7/12/66)
 H. R. 16172 (Tenzer - 7/12/66)
 H. R. 16358 (Jarman - 7/20/66)
 H. R. 17020 (Bingham - 8/15/66)
 H. R. 17252 (Kupferman - 8/24/66)
 H. R. 17351 (Reid - 8/25/66)

S. 3591 (Magnuson - 7/11/66) - adds transfer to DOT
 H. R. 16390 (Fino - 7/20/66) - same as S. 3591

Summary - These bills would allow FAA to make regulations; establish noise measurement standards; permit Administrator to amend, modify, suspend or revoke any certificate authorized by Title VI.

II. Variations of Administration Bills

1. H. R. 16024 (Zablocki - 6/29/66)
 H. R. 16087 (Halpern - 6/30/66)
 H. R. 16339 (Gilbert - 7/19/66)

Summary - Same as administration bills, plus sense of Congress that millions are disturbed by aircraft noise threatening their health and welfare, directs FAA to develop extensive knowledge on noise abatement, including mechanical devices, zoning and land use.

2. H. R. 2086 (Tenzer - 1/7/65)
 H. R. 4962 (Miller - 2/16/65)
 H. R. 7982 (Tenzer - 5/6/65)
 H. R. 11481 (Corman - 10/7/65)
 H. R. 16214 (Ottinger - 7/13/66)

Summary - Would establish an FAA Aircraft Noise and Pollution Control Service to conduct research, develop noise measurement standards, quieter engines, study noise abatement devices (engines, operation of aircraft, zoning and land use), establish regulations and rules. Service would reimburse (1) carriers to 30% of aircraft modification cost or purchase of new aircraft, (2) airports to 30% to comply with regulations, (3) states and municipalities to 90% of land requisition costs.

.. 3. H. R. 15874 (Wylder - 6/22/66)

Summary - Establish Office of Aircraft Noise Abatement in FAA, to establish standards of noise measurement, rules for abatement, permit amendment, suspension, etc. of certificates issued under Title VI.

4. H. R. 5659 (Halpern - 3/2/65)

Summary - Allows FAA to make noise regulations, punish violations with fines up to \$1500, and after 3 violations to amend, suspend or revoke any certificate issued (airman, airworthiness, air carrier operating).

5. H. R. 5658 (Halpern - 3/2/65)

Summary - Establish Aircraft Noise Abatement Service in FAA; to research noise measurement, quieter aircraft, other noise abatement devices, authorizes appropriation of \$20 million.

H. R. 5660 (Halpern - 3/2/66) - Requires FAA to issue noise regulations.

6. H. R. 17350 (Reid - 8/25/66)

Summary - FAA Administrator to make regulations for eliminating noise and air pollution, permits reimbursement similar to 2. above.

III. FAA Control over Noise - Advisory

- H. R. 588 (Multer - 1/4/65)
- H. R. 670 (Pucinski - 1/4/65)
- H. R. 5661 (Halpern - 3/2/65)
- H. R. 7983 (C. H. Wilson - 5/6/65)

Summary - Administrator of FAA would assist other agencies in research to establish practical noise criteria, noise abatement; could make research grants to states and institutions.

IV. NASA Noise Research

- H. R. 7981 (Tenzer - 5/6/65)
- H. R. 11340 (Matsunaga - 9/29/65)
- H. R. 11473 (Bingham - 10/7/65)
- H. R. 11482 (Corman - 10/7/65)
- H. R. 16215 (Ottinger - 7/13/66)
- H. R. 17604 (Reid - 9/8/66)

Summary - NASA to research noise measurement standards related to annoyance, develop quieter aircraft, get data on noise abatement through suppression devices, air traffic control, zoning and land use. To determine causes of noise, solve other nuisances arising from aircraft or airports.

V. Independent Commissions

- H. R. 669 (Pucinski - 1/4/65)
- H. R. 14826 (Collier - 5/3/66)
- H. R. 15322 (Halpern - 5/26/66)

Summary - To establish an independent permanent commission on noise abatement to study noise problems - engine design, suppression, traffic rules, design and location of airports; determine extent of Federal, state and local authority to limit noise.

VI. Surgeon General

1. H. R. 9849 (C. H. Wilson - 7/14/65)

Summary - Surgeon General of Public Health Service to investigate health hazards due to noise, make studies, recommendations.

2. H. R. 14602 (Kupferman - 4/25/66)

Summary - Establish Office of Noise Control in Surgeon General's office, get information on noise, control, prevention and abatement. Grants to states authorized, appropriating the following:

\$3 million	- 1967
5 million	- 1968
7 million	- 1969
9 million	- 1970
9 million	- 1971

To research noise control techniques.

LEGAL, AND RELATED, ASPECTS OF
AIRPORT LAND USE PLANNING

STUDY PREPARED FOR
AIR TRANSPORT ASSOCIATION OF AMERICA
By Lyman M. Tondell, Jr.
September 16, 1966

Paper for Committee No. 2
United Kingdom Noise Conference
November 22-30, 1966

LYMAN M. TONDEL, JR.

FIFTY TWO WALL STREET
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September 16, 1966

John E. Stephen, Esq.
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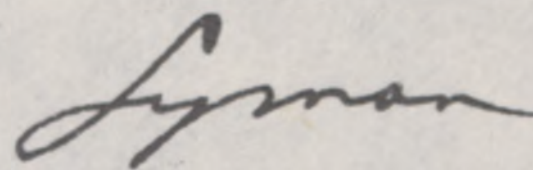
Dear John:

Enclosed is my paper for Committee No. 2 at the forthcoming United Kingdom Noise Conference. It is entitled "Legal, and Related, Aspects of Airport Land Use Planning".

It has been a fascinating assignment to prepare this study for the Air Transport Association of America and I very much look forward to attending the meeting in London in November as a representative of the Air Transport Association.

Please thank very specially your people who did the onerous job of collecting the data on the airports.

Sincerely,



Lyman M. Tondel, Jr.

Enclosure

(111)

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January 1, 1966

Legal, and Related, Aspects of Airport
Land Use Planning

by

Lyman M. Tondel, Jr.
New York City, U.S.A.

- - - - -
PREFACE

The general subject of this conference is noise abatement at airports, and this paper is but one of those that deals with the phase of the general subject assigned to Committee No. 2. That phase relates to means of reducing airport noise annoyance by keeping the people who might be subject to it from living, or assembling in large numbers, in an "affected area".*

The five other Committees' subjects include reduction of aircraft noise at its source, or by operating techniques, which are the other two principal methods. As will be seen, the area and degree of noise annoyance may be reduced by wise land use planning in the "affected areas" and every locality is well advised to do such planning; but the practical problems that stand in the way of making such planning effective are so numerous, and vary so greatly from one "affected area" to

* Since Committee No. 4 deals with means of measuring or defining an affected area there is little discussion of such means in this paper. An "affected area" will simply be referred to as such.

another, that to date such plans usually have not been substantially carried out. In consequence, it is realistic not to put too much confidence in land use planning as the solution to the noise problem, especially at existing airports where the practical problems are the most serious. No overall means of preventing noise annoyance near airports has yet been discovered, and this writer doubts that any will be unless there is some major scientific and engineering break-through. Meanwhile it is imperative for all means of noise annoyance reduction to be pursued.

While jet aircraft noise presents society with one of its most difficult annoyance problems, we must repeatedly remind ourselves that there are other severe annoyances (noise and others) in modern society, and that it is not equitable, for example, to pay large sums of money to buy from their owners at fair market value all residences within 5 or 6 miles from the end of a runway and pay nothing to a homeowner 100 feet from a new superhighway that is not only noisy but, by the very fact of its being built, destroys pre-existing community relationships. Means, such as purchases of property, for reducing airport noise annoyance must be considered not only from the narrow point of view of relief for the airport neighbor but also from the point of view of the extent to which the cost of such relief may be imposed on the public, or segments thereof, without giving similar relief to others such as superhighway neighbors.

This paper is written from the point of view of air transport users of civilian jet airports. Such United States airport users are privately-owned companies (i.e., with stock, in most cases widely distributed, in the hands of the public), of varying sizes, which are regulated by the national government. Domestic air traffic operations are regulated by the Federal Aviation Agency^{1*} (the "FAA") and their economic aspects, including routes, schedules, rates, and services, by the Civil Aeronautics Board² (the "CAB"). On the other hand, the siting and planning of airports has been left to State and local governments, subject to (1) safety aspects over which the FAA has, in effect, a veto power,³ and (2) certain conditions, including compliance with the FAA's National Airport Plan,⁴ if funds of the Federal Government are to be used. Largely as a result of this fact, the United States Supreme Court has held that the airport operator (usually a local government or local agency of government), rather than the airport users or the Federal Government, is responsible for paying for property of airport neighbors that has been "taken" as part of the approach paths.⁵

In fact most of the 50 State governments in the United States have played only a minor role apart from conferring on local units of government the necessary powers to establish and operate airports.⁶

* The footnotes are on separately numbered pages at the end of the text.

With countless localities thus primarily concerned with the siting and planning of airports, under the laws of the 50 States, differences in laws and in governmental structure, as well as differences in geography, weather, existing land use, population, economics, and other factors, preclude any mandatory uniform approach, just as any uniform approach is impossible for all civil airports in all nations with their far more diverse situations. One advantage, however, of this diversity is that nations and localities have countless "laboratories" from which to learn.

This paper begins with a factual and historical Introduction, to put the problem, as it exists in the United States, in perspective. It refers at the outset to the great desirability of including airports and their needs in overall community planning. It will show, among other things, the rapidly increasing demand for air transportation, and its importance to the welfare of cities; the extent, nature and effect of the airport noise problem in the United States; and the steps taken to date to try to control it.

Part I is concerned with existing civilian jet airports in the United States. It will review the history of their establishment and financing. It will explain why almost all of the major existing civilian jet airports in the United States were sited and planned 15 or more years ago, when urban centers were much smaller, aircraft were more primitive, and the use of air transport was much less general; and why in most

cases such airports will continue to be used, although frequently expanded. It will bring out some of the extremely difficult problems that must be faced at most such existing airports in order to reduce noise annoyance by land use planning in the "affected areas". It will emphasize the importance, nonetheless, of having a plan for each "affected area", implementing it gradually, as reasonable opportunity permits, even though complete overall implementation is impossible, and especially the importance of keeping open, or keeping in compatible use, those "affected areas" that are still in that condition.

Even though there have been few wholly new civilian jet airports in the United States, the rapidly increasing demand for air transportation makes it inevitable that new ones will be built, perhaps many. Part II discusses the factors to be considered in their site selection with, of course, special emphasis on the greater opportunities for effective land use planning around wholly new airports.

With the Introduction and Parts I and II as background, Part III will discuss some of the legal problems involved in the United States in limiting noncompatible land use near airports, with some suggestions as to how the law might perhaps be changed to permit more effective land use planning, and Part IV is a brief conclusion.

INTRODUCTION

1. New Airports as a Part of Overall Community Planning. The rapidly increasing population of the United States, especially in most larger cities and their suburbs, has made it of major importance to make long-range plans as to the use of the land. In the northeastern United States, from Boston, Massachusetts, to northern Virginia, a distance of about 450 miles, the open spaces are rapidly disappearing; and, on a rather terrifying scale, the "population explosion" is making this true in many other parts of the United States as well as in so many other parts of the world.

Simultaneously, passenger travel (both business and pleasure) and movements of goods, by air, have been increasing much faster than the population.⁷ The demand for adequate highway and air transportation facilities keeps ahead of the supply. New residential developments require new or improved roads, as well as all the other modern utilities, services, schools, hospitals and other facilities. Retail business follows the market and stores spring up, including massive suburban or rural shopping centers, and many industries move their plants to be near their prospective employees. Scattered general aviation airfields and facilities are demanded as well as ready access from many directions to the nearest civilian jet airport. If advance plans are not made, and effectively carried out, the open spaces in the

vicinity of cities disappear, or at least become so mottled with building developments that they can no longer serve adequately those needs, such as airports, that require large areas of open space.

To try to meet the obvious need for planning many governmental bodies are involved, at all levels of government, in trying to plan a rational and, if possible, attractive pattern of development for their respective areas. Some States and localities are, of course, much less sensitive to the problem than others. Ideally such planning bodies deal with their problems comprehensively and, ideally, their plans would be made available for comment by all concerned, and then be enforced. But however well-laid their plans may have been, pressures, unforeseen developments and other factors have frequently prevented such plans from being carried out. For example, in New Jersey in 1950 the first State Development Plan recommended expansion of a number of existing air facilities. Six of these, however, were replaced by other forms of land use before the expansion could take place -- three for residential developments and the others for commercial or industrial use. Three other airports had to be closed as a result of intersecting them with highways, thereby demonstrating the conflict that exists even among agencies of government with respect to the validity of plans. Only 25% of the 48 airport sites originally proposed in the 1950 Plan were still sufficiently "open" in 1965 to permit construction of airports.⁸

The demand for additional airports should nonetheless be considered in any overall plan; and whatever land may be desirable for them should be effectively set aside years in advance as part of the regional plan, because air transportation is growing so rapidly and because it takes a good many years to design and construct a major airport.⁹

The plan must, of course, take into account the current uses and developments of the land as part of the starting point. It must site the airports on the basis of the safety and basic economic factors that are discussed in Part II below; it should provide them with enough land to handle foreseeable traffic needs; it should include appropriate access highways to the airport, aligned when possible with runway approaches; it should relate the airport economically to the planned utilities; and it should take into account the foreseeable noise problems and effectively preclude noncompatible uses from certain areas, especially if they are still open or in compatible use. There should, ideally, be comprehensive planning that would permit the airport to be there, to operate, to be free of obstructions and to be free of noncompatible land uses in the immediate area.

While an expensive, existing airport may be an established fact that must be treated as such in an overall plan, nevertheless it may be possible to fit its expansion, or new related facilities, into an overall community land use plan; and, where reasonable, that should be the objective.

Such is the ideal, in very sketchy form, even though it is an ideal seldom achieved to date because the population and transportation explosion has kept too far ahead of the ability to plan effectively. The ideal must be kept in mind, however, because the more successful the planning, the fewer will be the valid objections to airport operations; but it must be continually kept in mind that for a plan to be successful it must be practical and sensible and be realistically and effectively implemented.

2. The Place of Air Transportation in the United States. In spite of all the efforts of scientists, engineers, engine and airframe manufacturers, air transport companies, universities, agencies of government and others to reduce aircraft noise at its source,¹⁰ it is, to date, an unavoidable concomitant of air transportation. Whether viewed nationally or locally, aviation has assumed a place of primary importance in intercity transportation in the United States where domestic revenue passenger miles increased from less than 10 billion to almost 20 billion to over 50 billion, in 1950, 1955 and 1965, respectively (see Appendix I), and domestic air intercity cargo ton miles increased from 274 million to 428 million to 1,669 million in the same years (see Appendix II). As shown by Appendix III, air transport is now the predominant means of intercity common carrier transportation in the United States.

A few quotations from studies at various localities in the United States will show the importance such localities place on the adequacy of their air transport services:

Anchorage, Alaska:

"There is hardly a single aspect in the economic life of the Greater Anchorage Area that is not dependent on the aviation industry."¹¹

Fresno, California:

"To the local community, these new characteristics of the jet age are of utmost importance. In the future, industry will tend to locate in areas where long range, rapid air transportation is available to make possible national and international shipment of goods and personnel. It will be increasingly important for major trade and distribution centers to have facilities to accommodate jet transportation."¹²

* * * * *

"Urban encroachment, if allowed to continue, could prevent the future reclassification of the terminal upward in the scale on the basis of runway length. Such a handicap would, of course, prevent the metropolitan area from enjoying the many assets and increased revenue that would in all probability accompany an increased volume of air traffic made possible by aircraft requiring greater runway length."¹³

New Jersey:

". . . The availability of jet service is vital to New Jersey since the time consumed traveling to major airports in adjoining states often negates the convenience of high speed travel."¹⁴

Oklahoma City:

"In recent years, Oklahoma City has become a major regional, national, and international center for many economic activities. This surge to economic prominence is primarily due to the rapid increase of

new industrial activities in the Oklahoma City area. Many of these industries have located here largely because of the available air facilities.

"There is a growing relationship between air transportation and industry which is characterized by increasing industrial reliance upon aviation facilities for distribution and movement of products and materials. This growing dependence upon air service by industry is the result of changing industrial market trends. Between 1959 and 1962 some 140 new manufacturing industries were located in the Oklahoma City area, most of which were closely oriented to national markets requiring frequent and rapid contact with other locations throughout the country."¹⁵

San Francisco:

"Modern jet aircraft -- with globe circling ability -- and the passengers and cargo they transport in and out of the Airport form a nucleus around which a vast network of related industrial activities has developed. The Airport is such a vital link in the area's economy that today, commercial aviation ranks right at the top of the Bay Region's basic industries."¹⁶

Indeed in one legal proceeding ¹⁷ Fort Worth, Texas, as long ago as 1960, successfully sought, and won, jet service on the ground that, without jets, the air service to Fort Worth was not "adequate" as required under Federal law.¹⁸

Nor are the localities unaware of the employment and collateral benefits produced by a major airport. As stated last year by the State of New Jersey Department of Conservation and Economic Development:

"As a source of employment, major air facilities constitute a significant job market. Currently, it is estimated that the John F. Kennedy International Airport accounts for 80,000 jobs either on-site or generated in related services and industries. While

it is not correct to say that all these employment opportunities would not exist if there were no major air terminal, a significant portion of these jobs are tied directly to the airport's operation. It has been anticipated that a new major air facility in New Jersey-New York metropolitan area would stimulate some 135,000 jobs, in the operation and maintenance of on-site facilities, in servicing aircraft, and in operating concession and commercial facilities such as restaurants, stores, motels, etc. It is important to note that persons employed in air transportation earn higher annual wages, on the average, than over-all median incomes of urban job holders. In 1959, for example, workers in air transportation in the New York metropolitan area earned an average wage of \$6,700 or about \$2,000 more than the average wage rate for the remainder of the region's employees. Therefore, it can be seen that air facilities employees constitute a significant consumer market, having above average disposable incomes."¹⁹

San Francisco International Airport issued a FACT SHEET in June, 1966, which stated that there are about 25,000 workers who have jobs in the San Francisco Bay Region, with an annual payroll of approximately \$200,000,000, that are "related directly to air transportation" at the Airport. Air transportation was described as "the area's most rapidly growing industry".²⁰

Thus the civilian jet airports in the United States are of major importance to the localities as well as to the nation; and the network of them, and their capacity, would continue to grow even if no progress were made in the efforts to abate their noise. However, at all levels and from all parties interested in civil air transport, there is recognition that the airport noise problem is a very serious one that must be kept within as close limits as practicable if civilian air transportation is to achieve its maximum potential.

As the Federal Aviation Administrator, General McKee, stated in December, 1965:

" . . . [T]he noise problem, as it now exists, represents a growing barrier to the future growth of our industry."²¹

And, as recognized by the Fresno Planning Commission in the quotation on page 10, supra, "urban encroachment" might very well, in a particular case, prevent a metropolitan area from having long enough runways at its airport to accommodate all the air traffic it would like. The "chief problem facing Lindbergh Field (San Diego, Calif.) as an air carrier airport clearly relates to the compatibility between the airport operation and the land uses in neighboring areas".²²

3. The Extent, Recognition, Nature and Effect of the Noise Problem. Almost all new widespread developments in the utility, transportation, industrial and other fields have annoyed many people. Noise, odors, smoke, dust, vibration, real or imagined danger, pollution, and other annoying or damaging conditions have accompanied technological changes, especially in their early unfamiliar stages, and before such conditions were recognized and eliminated or reduced to tolerable limits.²³ Written reports of cases in United States courts provide a history of the countless controversies between the innovators, especially in the fields of public improvements and public utilities, and the residents who opposed the "improvements", whether railroad,²⁴ highway,²⁵ canal,²⁶ or other.

The early 1930s saw the first such airport cases;²⁷ and a good many others followed, involving piston planes of increasingly large size.²⁸

With this experience behind them, airport operators, manufacturers and air transport companies alike foresaw the increasing noise problem that the jets would produce. They were handicapped because the prototypes were military jets which could not afford to sacrifice speed or other flight characteristics for noise abatement. Nonetheless, in varying ways, they tried to cope with the civilian jet noise problem from the start, and, needless to say, all noise reductions that result from changes in operating techniques would be impossible without excellent cooperation from the pilots themselves.²⁹

The first commercial jet flights by United States air carriers were in 1958.³⁰ By the end of 1959, the National Aircraft Noise Abatement Council ("NANAC") had been formed "by the Air Transport Association of America, the Air Line Pilots Association, and the Aerospace Industries Association as a fully independent, non-profit corporation, to meet the very real need for a single, central organization to coordinate a nation-wide, industry-wide attack on the noise problem". The Airport Operators Council and the American Association of Airport Executives later became members.

By 1963, before the turbofan generation of aircraft, NANAC estimated that the aircraft manufacturers had spent more

than \$50,000,000 on research and development to produce in-flight sound suppressors.³¹ The airlines installed such suppressors on at least 325 of such jet air carriers at about \$240,000 per 4-engine jet³² (a total of \$78,000,000); and it cost the airlines an extra \$39,000,000 or so per year (\$10,000 per jet per month) to carry the suppressors because of loss of speed, increased weight, and drag.³³

In addition various airports added very expensive runway extensions³⁴ and, frequently with FAA financial aid, installed instrumentation to aid the aircraft in complying with noise abatement procedures. Many airports have had full-time employees at work on noise abatement studies and procedures, including constant contact with the reactions of neighboring communities. At some airports all training flights, except those that are unavoidable, have been removed, and there have been increasingly expensive operating delays and changes in flight patterns for noise abatement purposes.

The FAA has, since 1959, issued a series of Orders designed to reduce noise annoyance by requiring compliance with prescribed operating techniques, including preferential runway systems. These Orders were first issued for Los Angeles International Airport,³⁵ New York (now John F. Kennedy) International Airport,³⁶ and Washington National Airport,³⁷ and then for general application.³⁸ Both the FAA and other branches of the Federal Government have had, and continue

to have, extensive technical and research programs,³⁹ and the airports and the airlines and the pilots continue to strive to improve operational techniques on an airport-by-airport and runway-by-runway basis.

Even though all these efforts and expenditures have reduced the noise annoyance caused by civilian jet aircraft (as can readily be observed by listening to military jets as compared with their civilian counterparts), it has not been sufficient. And now larger jets are in prospect because greater traffic volume is inevitable. Even the SSTs (with which this paper is not concerned for lack of adequate data) are on the horizon.

As a result the United States Government has, itself, in recent years asserted a much stronger lead in the drive for further noise abatement techniques. The Committee on Interstate and Foreign Commerce of the House of Representatives (the "Harris Committee") conducted hearings off-and-on for four years in five cities (the Harris Committee Hearings) and produced a report (the Harris Report) in 1963 which, while urging further Federal research efforts, put major emphasis on greater land use controls by local government agencies. However, in 1965, under President Johnson, his own Office of Science and Technology held a panel discussion on October 29, 1965, based on 21 papers on various aspects of the aircraft noise problem;⁴⁰ and that discussion has led to a firmer

Federal leadership. It led to the establishment of a permanent Advisory Committee to the Office of Science and Technology, in the Executive Office of the President, composed of members from interested government agencies and of nonmember advisors from the aviation industry, officials of State and local governments, and organizations concerned with land uses. The Committee held its first meeting on August 9, 1966. Its purpose is to assist in the evaluation and general direction of the Government's overall program concerned with the alleviation of jet aircraft noise. Meanwhile President Johnson has addressed himself expressly to the problem;⁴¹ an intensified governmental "attack" on all facets of the problem has been organized; and Congress has before it a number of Bills, including one sponsored by the FAA.⁴²

From the work to date several basic facts are clear as to the nature of the noise problem:

- (1) Although there are certain people who desire to live near an airport (i.e., those who work there or who travel a great deal by air⁴³), there are "affected areas" off the end of most runways at civilian jet airports where residential use is noncompatible and should be avoided to the greatest extent reasonably practicable.
- (2) There is quite general agreement that it is inadvisable to locate schools, churches, hospitals

and places of public assembly under approach paths near the ends of runways⁴⁴ because of interference with communication and the remote risk of a disastrous crash.

- (3) The air traffic which causes noise is economically important to the locality as well as to the nation, and the volume of traffic will expand.⁴⁵
- (4) Although the noise from jets causes severe annoyance in certain areas around airports, there was no evidence before the Harris Committee that the noise caused any permanent bodily harm⁴⁶ nor, so far as known, has any bodily injury caused by such noise to an airport neighbor been proved in any court of law in the United States.
- (5) While jets still make some airport neighbors fearful of injury from crashes, the facts show such fears to be almost totally unjustified.⁴⁷ Nevertheless a substantial part of the annoyance caused by jet noise seems to be associated with fear.⁴⁸
- (6) There is no indication that jet aircraft violate any anti-pollution ordinances or significantly contribute to the deterioration of air quality surrounding an airport.⁴⁹
- (7) While the reports are somewhat mixed it would appear, based on studies by real estate appraisers⁵⁰

and on airport reports,⁵¹ that as far as the effect of the airports on real estate values is concerned:

- a. Overall, taking all property uses into account, property values in a jet airport's neighborhood tend to follow the same trends as other property in the area not influenced by the airport;
- b. The real estate values of certain residences and of certain land for residential purposes may fall because of the proximity of approach paths; but
- c. Where suitably located for certain purposes (especially airport-related activities, industry for which quick airport-access is important, commercial uses along access highways, etc.) real estate values are higher than if the airport were not there.

The land use problem is thus, primarily, how to reduce or prevent the use of "affected areas" for places of public assembly and how to reduce or prevent the use of such areas for residences.

PART IEXISTING CIVILIAN JET AIRPORTS IN
THE UNITED STATESA. Certain Basic Facts Regarding Them; and
the Likelihood of Their Continued Use.

Appendix IV lists all of the 127 civilian jet airports in the 50 States as of January 1, 1966, showing, for each, its location, name, owner and operator, distance from nearest city center, and date of first use as an airport (whether civilian or military).

All 61 cities in the United States that had a population of over 200,000 by 1960 have at least one nearby civilian jet airport, and probably* 113 of the 127 airports listed in Appendix IV (including all but probably* 4 of those serving the aforementioned 61 larger cities) had begun operations prior to 1950. Only 28 of the airports on Appendix IV were more than 10 miles from the nearest city center, only 7 were more than 15 miles, and only 5 were 20 miles or more.

Since 1950 these cities have, speaking generally, been surrounding their airports -- which explains to a substantial degree the seriousness of the noise problem. In 1950, 64% of the total United States population of 151,326,000 was urban (or a total urban population of 96,847,000), compared, in 1960, with 69.9% of 179,323,000 (or a total urban population of 125,284,000). In ten years the urban population grew by almost 30,000,000.⁵²

* The dates when two were first used as airports are not available.

Naturally, the 113 airports established by 1950 were sited with existing aircraft in mind plus, at best, those that seemed probable in the relatively near future; and they were sited in the light of the then-existing cities. As shown by Appendix IV, they were usually located in, or in a few cases slightly beyond, the city's outskirts. This was partly because ground transportation was inadequate to serve more distant airports in a satisfactorily brief elapsed time. As many metropolitan areas thereafter grew in size at an unprecedented rate, airport locations became surrounded by urban or suburban development.

These existing airports now represent large investments not only in property and runways but in terminals, hangars and concessions; they have been the focal points for access roads and airport-related activity; and they are in most cases more accessible than any likely location for a well-planned new airport. Consequently, there is a natural tendency to expand these existing facilities to satisfy the burgeoning demand, rather than abandon them for new airports. In most cases a new airport in the area will supplement, not replace.⁵³

B. How They Have Been Financed.

1. Extent of Federal Aid.

In general, except for the Federal aid described in the following paragraphs, civilian jet airport financing has

been left to local governments. The States themselves have, on the whole, contributed little.

Until 1938, direct financial aid for airports by the Federal Government was prohibited.⁵⁴ However, in the form of work-relief, \$385,157,592 was actually devoted by the United States Government to airport development during the depressed economic conditions of the 1930s and the early 1940s, along with \$110,503,371 from localities on shared-cost programs.⁵⁵ In 1938 the Civil Aeronautics Act was passed, which authorized a Federal survey of airport needs and the expenditure of Federal funds for constructing landing areas, provided the area was necessary for air commerce or national defense.⁵⁶

During World War II, \$353,020,333 was spent by the Federal Government to develop military landing areas in the continental United States (exclusive of funds spent on them by military agencies), and \$9,513,995 was spent on landing areas solely for civil purposes.⁵⁷ After the war had ended, over 500 airports constructed for military use were declared surplus and were turned over to localities for civil airport use.⁵⁸

Approximately \$750,000,000 was thus spent by the civil arms of the Federal Government on domestic airports prior to 1946, but about \$353,000,000 of this amount was spent on military landing areas during World War II and almost all of the balance (about \$385,000,000) was spent primarily for

work-relief rather than for any coordinated airport program. Even though so many existing airports owe their origins to these expenditures (at dates prior to 1946), they did not reflect any intention by the Federal Government to finance or site civil airports.

Finally, in 1946, a plan for Federal monetary aid for airport development was included in an Act of Congress.⁵⁹ From 1947 to 1965, the total appropriations under this Act were \$865,966,000⁶⁰ or an average of only about \$48,109,000 per annum. Since the Act requires that 75% of these funds be apportioned among the 50 States on the basis of area and population and that the maximum Federal grant for any project be 50% (except for high-intensity lighting where the maximum is 75%),⁶¹ the Federal-Aid-Airport Program does not provide the localities with sufficient funds to finance expansion, let alone new airports.

Thus, although the Federal Government began, in 1946, to play an active role in financing airports and airport improvements in the United States, it has appropriated relatively small sums in the light of the number of airports (and States). In contrast, the vastness of the sums that could be spent for airport noise abatement was brought out when Major General Kuhfeld, then Judge Advocate General of the United States Air Force, testified before the Harris Committee that an Air Force study made in 1956, at the suggestion of

the Lands Division, Department of Justice, estimated at \$7,000,000,000 the cost of acquiring aviation easements to a distance of 6 miles from the end of each air-base strip.⁶²

A very important aspect of the 1946 Act, which, as amended, remains in effect, was that it sought to achieve an orderly development of the airport system in the United States. While it left the siting of the airport to the local government, it required that certain conditions be met to obtain Federal financial aid, including:⁶³

- (1) The airport must be owned by a public agency;
- (2) It must be included in the FAA's National Airport Plan, which is revised, and submitted to Congress, each year. Under the FAA's policy any airport may be included in the Plan if it serves a community which has "a substantial aeronautical requirement" and which will require airport development within the period covered by the Plan.⁶⁴

In carrying out the Act, the FAA issued further, more detailed policy objectives to the same end.⁶⁵

2. Other Sources of Civil Airport Financing in the United States.

The principal Federal contributions, summarized above,⁶⁶ have, as indicated, represented only a small percentage of the total necessary to finance the existing civil airports in the United States. Local units of government

have provided the largest portion of funds for civil airports from the following three principal sources:

- a. Local tax revenues;
- b. General obligation bonds of local government backed up and serviced by local tax revenues; and
- c. Revenue bonds* which are backed up and serviced principally by rentals paid by airlines and concessionaires.⁶⁷

There are, of course, other possible methods of financing noise abatement costs, including, notably, the suggestion frequently made of Federal loans for land acquisitions that would be repayable from rentals, or sales, to tenants or purchasers for only compatible land uses. A legal problem inherent in this suggestion is whether subsequent purchasers could be bound by the restriction to compatible uses. However, the point here is that, based on the history to date, the costs of achieving noise abatement must be carefully considered since airport owners have only limited amounts to spend. Each airport's particular situation must be examined and, while all reasonable steps should be taken to reduce the potential impact of aircraft noise, a serious effort must be made not to acquire rights in more

* "Revenue bonds" are bonds issued by a governmental unit the proceeds from which are to be spent only on a particular revenue-producing project, and the revenues from that project are the only funds to which the bondholders may look for servicing or payment. On the other hand, the holders of "general obligation" government bonds may look to all the tax revenues.

property, for example, than is reasonably necessary; and certainly funds should not be used to acquire rights in all the land, indiscriminately, within a given number of miles of the airport or its runways, regardless of existing use and regardless of cost. The same observation applies in connection with zoning in highly developed surroundings unless nonconforming, pre-existing uses are to be permitted on a broad scale.

C. The Significance of Planning in the Case of Existing Airports.

As shown above, the tendency is to expand existing airports rather than to abandon them, even though they have become crowded by residential and other noncompatible development. While implementation is thus more difficult, even theoretically, than in the case of a new airport in relatively open space, a comprehensive urban development plan is desirable for the area in which the airport is to be located.⁶⁸ If the ultimate desirable dimensions of the airport, clear zones, and affected areas are incorporated in a plan that effectively governs changes in the use of property, the area in question may, hopefully, over the years, be gradually turned to compatible uses without inordinate expense. Such an effort should include an inventory of all properties in the affected areas, a watchful eye on use and ownership, and conversion to compatible use as it becomes necessary or reasonably practicable.

It is simplest, however, and the logical starting place in implementing such a plan, to take every available legal step to keep open all plots in the affected areas that have not yet been developed. The greatest failure by communities adjoining American airports has been their inability to keep such areas open. At John F. Kennedy International Airport (New York), at San Francisco International Airport, at Seattle-Tacoma Airport, and at many others, building permits have been granted and residential units built in previously open approach areas, even while other residents of very nearby areas have been pressing "noise" suits.⁶⁹

Since local government land use plans have so often proved ineffective, the answer in the United States may have to be larger amounts of Federal aid (either loans or grants) for acquisitions in "affected areas"; a denial of Federal financial aid unless there is an effective plan; and discontinuance of such aid if the plan is not followed.⁷⁰ This suggestion does not contemplate the acquisition of the fee (or of aviation easements) with respect to all properties in "affected areas" (the cost of which would be prohibitive at many existing airports and the practical implementation of which would probably be impossible) but rather the prevention of further noncompatible building in the areas and the gradual elimination, as opportunities are presented, of existing noncompatible uses.

PART IITHE SITING AND PLANNING OF NEW AIRPORTSA. Very Few Wholly New Airports in the United States in Recent Years.

While the United States has a network of civilian airports that serve almost all important centers of population, few wholly new ones have been constructed in recent years (see Appendix IV).

The Houston, Texas, Intercontinental Airport, scheduled to open in 1967, has been described as "the only major, non-Federal airport to be planned and constructed on an undeveloped tract in the past decade (1953-1963)".⁷¹ Sacramento, California, now has a new civilian jet airport under construction,⁷² and one is to be built to serve Dallas and Fort Worth, in Texas. The only such new Federal civilian airport was Dulles International Airport which began operations at Chantilly, Virginia, in 1962, to help serve Washington, D. C. However, with the burgeoning demand for air transportation (see Appendices I, II and III), even round-the-clock,⁷³ maximum utilization of existing airports, to the extent consistent with safety, is not going to fill the demand. New airports are going to be built in the United States⁷⁴ and it is desirable from the point of view of noise abatement that, from the very beginning of their design stage, adequate but sensible land use planning be a part of the program.

B. Safety Factors Considered in Site Selection.

In addition to Houston, Sacramento, Dallas-Fort Worth, and Washington, D. C. (Dulles), other communities that have seriously considered building a wholly new airport in recent years include New York City,⁷⁵ Chicago, Cleveland,⁷⁶ and Anchorage (Alaska).⁷⁷ Thus a number of studies have been made and from these, and other, sources⁷⁸ it is possible to compile the factors that have been considered in site selection.

The inevitable conclusion from these studies is that the basic requirements for a safe airport severely limit the number of available sites in most communities. These basic requirements, which are predicated on the primary need for air safety, include:

(1) A sufficiently large area of unused airspace to accommodate the air traffic of the proposed airport.⁷⁹ As mentioned above, almost all urban centers in the United States already have civilian airports whose use, if continued, requires large areas of airspace. Many such urban centers are also near military airports; and there are likely to be private general aviation airports in the area, as well.⁸⁰ Some, like those in the New York area, are close to those of nearby centers (i.e., Philadelphia) and the airspace of the two metropolitan areas may overlap.⁸¹ If continued use of an existing airport is contemplated, even though only for limited purposes, its use of airspace must not conflict with that of the new airport.

- (2) A sufficiently large plot of suitable land.

Among other things, it must be flat, and its geology must support the necessary runways and structures.⁸²

- (3) An area that is as free as possible from obstructions to the proposed air traffic, both natural and man-made.⁸³ Proximity to the ocean, a lake, or a river is frequently useful in this regard.

- (4) A location that is as free as possible, in the particular metropolitan area serviced, of climatic and atmospheric conditions that would unduly restrict its safe use as an airport.⁸⁴

C. Economic Factors Considered in Site Selection.

After these basic, physical, safety requirements have been met there are, typically, not many choices left, even in the broadest definition of a metropolitan area. Yet there remain a number of factors that must be taken into account, including:

- (1) Accessibility, in a reasonably brief elapsed time, for the principal categories of people who go to and from the airport.⁸⁵ A number of studies show that travel time, not distance, is decisive;⁸⁶ yet, in the United States, no really successful rapid-transit mass transportation system has been created to any major airport.⁸⁷ Automobiles, limousines and busses are

principally used in traveling to and from an airport and the people come from all directions. Studies at major cities show that less than 50% of such people come from the central city area,⁸⁸ thus making unrealistic the installation of mass rapid-transit between it and the airport.⁸⁹ Highway access time is the key consideration and 30 to 60 minutes is the most the majority of passengers will endure.⁹⁰ Thus, depending on traffic conditions, a radius of 25 or 30 miles from the city center (which is likely to be the most significant single source of traffic, though perhaps not as much as half of the total) marks the outer limit of location.⁹¹ Even Dulles International Airport, 27 miles from downtown Washington, D. C., with good access roads, has been used with reluctance.⁹²

(2) Inter-airport transfer. Where one or more existing airports are to be operated in addition to the new airport, a significant consideration in site selection is coordination among the two or more airports -- especially the transfer of passengers, personnel and equipment between airports.

(3) Reasonable cost. The acquisition of the necessary land and property rights must be possible at a cost consistent with the need for the airport. Even if ideally located in other ways, lower Manhattan, where New York City's financial district is located, could not be bought for an airport.⁹³

(4) Utilities. Either the necessary utilities must be available or it must be possible to make them available without disproportionate expense.⁹⁴

D. Noise Abatement Aspects of Site Selection.

The community seeking a site for a new airport, having considered all these factors, is left, typically, with few possible sites. The community may even decide to expand an existing airport rather than build a new one.⁹⁵

However, if a satisfactory new site is found that meets the above requirements it will have, almost by hypothesis, many of the characteristics that a site would have if noise abatement had been as basic a requirement as air traffic safety. It should be large enough to accommodate foreseeable needs, free of extensive building and other nearby obstructions, and available at reasonable prices. Thus when a new site is selected, as at Houston, Chantilly (Dulles) and Sacramento, there is likely to be an opportunity for significant noise abatement by compatible land use planning if the plans are made in time and carried out.

However, to achieve this result, there are certain prerequisites, including:

(1) The area to be set aside for the airport should be large enough to accommodate capacity, round-the-clock⁹⁶ use by all foreseeable types of aircraft that are likely

to be needed, and used, to serve the particular community's passengers, mail and cargo.

(2) The suitability of the site, the runway layout, and the general plan must be, at least informally, cleared in advance of its acquisition, with competent engineers and the FAA as well as with responsible officials of all local and State governmental units involved.

(3) As hereinafter discussed, in Part III, the legal powers of the appropriate governmental units must be checked against their planned activities; their powers may have to be enlarged; and various legal procedures (including perhaps even new State statutes) will be required in order to finance and carry out the plan. For example, sure provision must be made that the area will not be zoned against airports, that the approach areas will be zoned against obstructions and interference (glare, smoke, short-wave radios, bird sanctuaries, etc.), and, to the greatest practicable extent, that the "affected areas" will be safeguarded against noncompatible uses. This will require at least cooperation, and very likely even agreements, among the various local government entities that adjoin the airport and perhaps some farther removed.⁹⁷

(4) Arrangements for utilities and access highways must be made, with, if possible, alignment of the

latter with the projected runways for noise abatement purposes.

(5) Sufficient use of the airport must be assured by timely coordination with the airlines. Use by them cannot be assumed. Before they serve a new airport they must be satisfied of potential traffic volume; they must obtain route certificates and other clearances from the CAB; they must determine the extent to which they will require maintenance facilities at the airport; leases have to be negotiated with them; they may have to finance and construct special facilities, or have them constructed; and in numerous other ways the airport and the airlines will have to correlate the proposed operation. In this connection the inter-airport transfer problem (supra, p. 31) must, of course, be resolved to the airlines' satisfaction.

Since it takes many years to select the site and to design, finance and construct a major airport these steps must be planned and coordinated at a very early stage.

Even if the planning is sound, coordinated procedures are well conceived, and there is adequate legal authority to implement them, it is unlikely that adequate land for the airport, especially in "affected areas" for noise abatement purposes, will be reserved unless firm and sensible leadership is exercised. Experience shows that as soon as the probability

of a new major airport at a selected site becomes public knowledge, much of the property in the area becomes more valuable for retail or industrial purposes; developers seek to build housing units for those who, to be close to their work or for other reasons, want to live near the airport; and pressure is put on the government officials to make land available. Effective implementation of such plans is far more difficult than their conception.

PART IIILEGAL PROBLEMS IN LIMITING NONCOMPATIBLE LAND
USES IN "AFFECTED AREAS" NEAR AIRPORTS

The discussion in this Part III may have pertinence whether (1) a wholly new airport is under consideration; or (2) an existing airport is being expanded; or (3) even though the airport in question is not being changed, efforts are being made to reduce noncompatible land uses in the area.

A. Legal Considerations in Defining
"Affected Areas".

As mentioned above (p. 1), the phrase "affected area" is used in this paper to describe whatever area is determined to be that area in which noncompatible uses should be eliminated for noise abatement purposes. Its measurement or definition is the subject of Committee No. 4.

However, since Committee No. 2 is concerned primarily with residential development, there is a fundamental legal caution that should be heeded, at least in the United States. Where the government seeks to make it illegal for an individual to reside on his own property or in his own home (whether owned or rented), or where the government destroys the value to him of his residential property, he is entitled under the United States Constitution and also under the Constitution of each of the 50 States to "due process of law". Among other things, this means that a zoning law, for

example, is not a constitutional exercise of the police power unless it is in the interest of the general welfare; unless there are valid, supportable reasons for the zones selected and the methods and standards of zoning used; and unless, in addition, lawful procedures are available to any affected individual to test the alleged justification for the zoning law as it applies to him.⁹⁸

The practical application of this to the problem at hand may be illustrated by an example. Suppose that a zoning ordinance forbade all new residential building at any point where the noise, measured by Method X, exceeds Y units of sound. For years Mr. Adams and his wife had owned a plot on their city's outskirts with the dream of some day building a house on it and moving to the country. They had done all the landscaping and planting over the years which could be done in advance of construction of the house; they had paid local taxes, assessments, charges for sewers, etc.; they had bought and paid for the architect's plans; and they were about to begin building their home when the zoning ordinance went into effect. Under its terms the noise from jet planes measured by Method X exceeded the maximum of Y units of sound at Adams' location. The airport had been built after they had acquired the property and they had been unhappy when the jets had begun to fly over it, but after balancing all of the factors pro and con they wanted to go ahead with their plans.

Suppose further that Mr. and Mrs. Adams were advised by their lawyer that they could not build under the ordinance; that they could not get a variance; and, further, that their only chance of going ahead with their plans would be to challenge successfully the constitutionality of the zoning ordinance, under either the Federal or State Constitution, even though on its face it seemed scientific and supportable in all respects. They decided, however, to enlist the help of Professor Smith, a friend who happened to teach acoustics in a nearby university. After investigation he testified in court that Method X, at least as applied to their property, was not based on adequate scientific data. If Professor Smith's expert testimony were sustained the courts would be likely to hold Method X an improper basis for denying Mr. and Mrs. Adams the right to build their home; and to hold the ordinance unconstitutional. The same would be true if the selection of Y units of sound as the standard could not be sustained by expert testimony, or if the zoning ordinance were based on community reactions to the noise calculated by Method Z which was not scientifically supportable.

The point is that, in addition to the subjects hereinafter discussed in this Part III, unless and until a supportable method is developed of measuring noise on the ground from planes, any zoning ordinance (or exercise of the right of condemnation or other governmental power or restriction) based on noise measurement is of questionable legality

and may be upset; and further that, even if the method of measurement were supportable, any scheme for classifying areas of property on the basis of noise acceptability for purposes of governmental regulation would have to be scientifically supportable before a court of law.

The foregoing caution relates, of course, to the "gray areas" -- to the question of how far out from the clear zones the power to zone and the power to condemn property may be exercised. It would seem that, regardless of methods of measurement of noise or community reactions, the courts would uphold prohibitions of noncompatible uses in the most seriously affected areas -- i.e., those directly under flight paths at the ends of clear zones -- where the Federal Courts would hold property to have been "taken" if already subject to a noncompatible use.⁹⁹ Similarly, even though the risk of a crash on landing or takeoff is so slight,¹⁰⁰ that slight risk, when taken together with interferences caused by noise, makes it likely that a governmental ban on the new construction of schools, churches, hospitals, and other places of public assembly would be upheld in more extended areas.

B. The Present State of the Law in the
United States as to the Extent to Which
Property Must Be Acquired.

The Federal Constitution of the United States and the Constitutions of 49 of the 50 States forbid the "taking"

of property for a public use without adequate compensation. In a series of about 25 cases (through 1965) it was held by the United States Supreme Court¹⁰¹ and various other Federal as well as State Courts that, if an airport neighbor can prove low and frequent flights over his property that have resulted in complete, or at least substantial, deprivation of the current use of his property, he is entitled to have the airport owner acquire and pay the fair value of his property.¹⁰² The Federal Courts have consistently held that this applies only where the flights are over the property in question,¹⁰³ but the Courts of two States have held that if the other tests are met this is not necessary.¹⁰⁴

In 26 States in the United States (but not in the United States Constitution itself) there are also provisions that the government may not even "damage" or "injure" a person's property by a public improvement without paying for the damage, or injury.¹⁰⁵ In one State, Washington, the State Supreme Court has held that under such a State constitutional provision the property owner must be paid an amount equivalent to any decline in the market value of his property that he can show was caused by noise from aircraft.¹⁰⁶

The Supreme Court of California, however, in a case involving a highway improvement, and most other States which have such constitutional provisions, have more severely limited the obligation of the State to pay for "damage" caused

by public improvements because, as pointed out by the Supreme Court of California, if the provision in the Constitution were taken literally it "would impose a severe burden on the public treasury and, in effect, place 'an embargo upon the creation of new and desirable roads'. . . ."107

No highway, for example, could be built if there had to be compensation to every property owner along the entire course of the highway who could show that the value of his property for its current use was depreciated as a result of the building of the highway. Of course if a person's property adjoining a highway is acquired, or if access is closed, he is entitled to compensation.¹⁰⁸ The same problem arises in connection with the construction of schools, prisons, hospitals, and almost all other types of public improvements since they inevitably cause at least annoyance to some of the persons in the area.

In short, in the United States it is now established that the airport owner has a legal obligation to acquire at least property under the low-and-frequent-flight paths whose current use is substantially destroyed as a result thereof.

The foregoing discussion is not included in this paper to suggest that the noise abatement effort should be so restricted but rather to show the minimum required by law, and also to emphasize that the use of any property for which the airport is obligated to pay under the above-mentioned

authorities cannot constitutionally be outlawed by zoning without paying the owner.

C. Zoning as a Means of Restricting
Noncompatible Uses.

Under the United States Constitution and the Constitutions of all the States, there is recognized in government a "police power" which may be exercised in the interest of the public as a whole, for its welfare, without the need to compensate individuals for financial losses they may suffer as a result of its exercise. The theory is that each member of the public is compensated for his loss by his share of the public benefit. Traffic rules are a simple, everyday example of the exercise of the police power. It may cost a New Yorker hundreds of dollars a year to park his car in a garage near his office because parking on the streets is banned, but he of course has no right to compensation because the parking limitations are a valid exercise of the police power.

It was not until 1926 that the United States Supreme Court specifically upheld a zoning ordinance as a valid exercise of the police power.¹⁰⁹ Until that time efforts to restrict various areas to certain types of use (i.e., limiting obnoxious industry to a particular area) had been regarded as invasions of the rights of the owners of the property in question to use their property as they saw fit.

Since 1926 the use of the zoning power has become quite common in the United States and the trend is towards more liberal exercise of the power but, as will be seen shortly in connection with efforts to zone against obstructions to aircraft, the courts in the United States are still delineating, on a case-by-case basis, how far the zoning power may be used to restrict the use of property under the police power -- and if the court in a given situation finds that the zoning law cannot be justified under the police power and the government wishes to proceed with its course, it must then condemn or purchase the property in question and pay for it.¹¹⁰

Before turning to noise abatement, land use, zoning, two other aspects of airport zoning should be mentioned.

First, it is simply noted that one of the serious risks in long-range airport planning is that, even after property has been acquired for an airport, a zoning ordinance may be enacted which will prohibit an airport in the area. Steps should be taken to minimize this risk.

Second, many States and local communities in the United States have for years implemented the FAA's and its predecessor's obstruction restrictions by zoning an appropriate area against structures or other projections into the air above a certain height at specified distances from the airport. These are so-called airport hazard or obstruction zoning ordinances. The need for them is obvious, in the interest of public safety, and they have not often been challenged.¹¹¹

However, even such ordinances have led to litigation in at least 8 States, and, although expressly found to be constitutional in Florida, in at least 3 States the State Supreme Courts

have held them unconstitutional as an improper exercise of the police power.¹¹² The theory is that instead of using the police power and thereby restricting the use of property, without payment, the governmental body should have condemned or purchased the property, and paid for it. While the trend may be in favor of upholding properly authorized and carefully drafted obstruction zoning laws,¹¹³ as long as there is any doubt as to the constitutionality of obstruction zoning laws as a proper exercise of the police power it is vital that they be drawn with the closest attention to the legal problems involved. Inasmuch as noise abatement land use zoning laws present further problems, as will be seen below, the same is even more important in drafting them.

Turning to the latter, there is no known court case directly involving their validity,¹¹⁴ and there are at least two unusual legal aspects of such laws which might cause special problems.

First. Residential zoning laws have commonly been based on the theory that the highest and best use is for the best class of residential property, and the most objectionable use is that which most severely impairs the welfare of the neighborhood. Such laws generally do not prevent anyone who wishes to do so from living next to the objectionable user, but they do prevent the latter from locating in a more highly zoned residential zone. In contrast, noise abatement, land use, zoning would bar even those who wished to do so from

building residences in the affected area. The question is the extent to which it helps the public welfare to keep them from doing so.

In a Note entitled Industrial Zoning to Exclude Higher Uses, 32 N.Y.U. L. Rev. 1261 (1957), the author found that 288 cities with over 10,000 population had, among their vast numbers of ordinances, for one reason or another, some form of ordinance that prohibited residential construction in industrial areas. This has been called noncumulative zoning. There have been several cases involving such ordinances; and in one the ordinance was found valid as applied.¹¹⁵

The principle has also received acceptance in other cases, even though not found by the courts to be valid as applied.¹¹⁶ One consideration has apparently been whether the proposed higher use (i.e., a new residence in a heavy industry zone) would be adversely affected by the existing lower use. Perhaps because the existing situation seemed to negative such an adverse effect, in the Corthouts, Katobimar and Comer cases cited in footnote 116 the ordinances were held invalid at least partly because there were already in existence in the zone uses comparable to those proposed. If this latter is the test, then the validity of noise abatement land use zoning against residences may to some extent depend in the United States on whether substantial residential building already exists in the zone.

building residences in the affected area. The question is the extent to which it helps the public welfare to keep them from doing so, and whether there is any demand to put the affected areas to the permitted, compatible uses.

In a Note entitled Industrial Zoning to Exclude Higher Uses, 32 N.Y.U.L. Rev. 1261 (1957), the author found that 288 cities with over 10,000 population had some form of ordinance that prohibited residential construction in industrial areas. This has been called noncumulative zoning. There have been several cases involving such ordinances; and in two the ordinances were found valid as applied.¹¹⁵ United States Supreme Court Justice Brennan, when sitting on the Supreme Court of New Jersey, wrote a strong dissent in the Katobimar Realty Co. case, cited in footnote 116, as to why, in the interest of land use planning for "the overall social and economic welfare" of the municipality, a proper zoning ordinance should be sustained that bans, for example, general business and residences from non-nuisance industrial parks.

The principle of noncumulative zoning has also received acceptance in other cases, even though not found by the courts to be valid as applied.¹¹⁶ Especially in the Kozesnik and Gruber cases cited in footnote 116, both of which were in the State of New Jersey, the courts made it clear that they found no fault with the principle of noncumulative zoning.

However, the Gruber case, as well as the Comer, Corthouts, Dooley, Opgal and Horn Construction Co. cases, held zoning ordinances invalid as applied because they were unreasonable and arbitrary, primarily on the ground that they rezoned the area where the plaintiff's property was located so as to permit only uses for which the plaintiff could not sell his property at a reasonable price. In the Dooley case the Connecticut court expressly said that the plaintiff's property could have been condemned. It may have been implicit in the other decisions as well that the fair and constitutional course, if most of the value of the plaintiff's property were to be sacrificed to the public welfare, was not rezoning under the police power, with no payment to the plaintiff, but rather condemnation, accompanied by payment of fair value. In most of these cases the fact that little, if any, of the property rezoned for industrial uses was in demand for such use was treated as significant.

In order to sustain zoning ordinances that exclude residences from areas near airports it may thus be desirable to show not only the importance from the point of view of the general welfare of having only compatible uses in the area, but also a real demand for the property for compatible uses. Fortunately the trend of industry to airport areas may, in many localities, factually confirm such a demand. On the other hand, as indicated in the Dooley case, it may not be enough if the only prospective buyer of the property is the government itself for park or recreation purposes.

Second. A zoning law must be in the interest of the public welfare. Is it constitutional in the United States for the government to tell Mr. and Mrs. Adams (pp. 37-38, supra) that they cannot build on their lot because other people say they are so annoyed by the jet noise that they bring lawsuits? A zoning ordinance cannot validly leave the owner of property without the opportunity to derive some reasonable use and benefit from it,¹¹⁷ and it would appear that where the owner has been virtually denied use of his property it was because the use involved was detrimental to the general welfare.¹¹⁸

The severity of the noise problem makes it essential to face these legal problems realistically. They exist because of the United States' basic respect for the rights of the individual which are not to be taken from him by the government except in accordance with the Constitution. The few cases indicate that the courts may be induced to sustain such ordinances provided:

(1) The statutes of the State where the airport is located give the local governmental body clear power to zone the affected areas against noncompatible uses for noise abatement purposes;¹¹⁹ and

(2) The ordinance itself --

(a) is properly enacted, after adequate public hearings, etc.;

(b) contains adequate procedural means for any affected person to challenge its application to his property if he so desires;

(c) permits pre-existing, nonconforming uses to continue unless the governmental body purchases the property;

(d) applies to an "affected area" that can be satisfactorily and scientifically justified as such (see pp. 36-39, supra); and

(e) permits compatible uses for which there is some demand.

It is obvious that such a zoning law is of the greatest utility, and involves the least expense to be effective, if it is enacted, kept in effect and enforced right from the time that a new airport is projected. It may be hoped that noise annoyance will be minimized at future airports because of legally sound advance zoning.

This is not to say that noise abatement zoning is not useful where there is an existing airport which is being crowded by incompatible development. As previously urged (p. 26, supra) it can be effective in preventing new noncompatible uses.¹²⁰ On the other hand, as also previously urged, where there is extensive development around an airport it is desirable to be as realistic as possible, and spend the available money to eliminate pre-existing, nonconforming uses in the most exposed locations (i.e., close in under approach paths), rather than on much less seriously affected, even though theoretically sensitive, areas.¹²¹

D. Property Acquisitions, Including Condemnation.

Reference has already been made to the possible need for an airport owner, in the interest of a noise abatement land use plan, to purchase property; and this need may exist even in the event of effective zoning if a pre-existing, nonconforming use is to be eliminated. Where there is not effective zoning, which is usually the case, purchases of property rights may be the only way for the airport to eliminate noncompatible uses.

If property is to be condemned, by use of the power of eminent domain (which all public airport operators may not have), a threshold question is whether the use for which the property is to be acquired is a public one. If not, it is an unconstitutional condemnation which the courts will disallow.¹²² Furthermore, in the United States, where both the Federal and all State Constitutions bar the taking of property by the government except for public use, a property owner may challenge a purported condemnation of the property under both State and Federal Constitutions and the tests of what constitutes a public use laid down by the courts of his State must be met as well as those laid down by the Federal Courts. The initial question any such court must decide is therefore whether acquisition of private property for the sole purpose of avoiding annoyance from jet noise is for a "public" use. The courts in the United States have tended of late to construe "public"

use to mean "public advantage" as well as "public employment", which is helpful; but this problem, and the private rights it reflects, cannot be ignored.

Whether the fee in the property or only an aviation easement is being acquired, the airport owner, being in almost all cases a public body where a civilian jet airport is concerned, must have adequate authority under law to make the purchase in question -- and this is true whether the property rights are being acquired by negotiation or by condemnation.

Since public funds are being used, the airport owners generally do not have unlimited power to buy property rights. One very practical problem that may arise in the early stages of trying to carry out a land use plan results from the fact that "excess" acquisitions of property rights by governmental bodies, including airport owners, will not be permitted.¹²³ In one case it was held that the City of Carlsbad, New Mexico, had exceeded its authority by condemning more land than was needed for a clear zone.¹²⁴ Of course the key question is the definition of "excess" and reasonable acquisitions to take care of foreseeable future needs should be permitted. Nonetheless, especially where property is being acquired only for noise abatement purposes, the applicable laws should be checked, and if necessary amended, to permit such acquisitions. One possibility would be for the statutes to permit such

acquisitions if they were made pursuant to a formal, long-range plan that had been approved by the requisite authorities.

Similarly, Federal financial aid is, as previously noted, available only for property acquisitions expressly permitted by law.¹²⁵ In consequence, it may be desirable not only for the State and local laws to be broad enough to permit acquisitions of property rights in the affected area, for noise abatement purposes, but also for the Federal law to be amended so as to expressly permit the use of Federal funds for such purposes, either by grants or loans. It would seem desirable, however, for such Federal financial aid to be supplied only on specified conditions. The most effective single method of achieving reasonable land use restrictions around new airports throughout the United States for noise abatement purposes might prove to be the enactment of Federal laws, to be administered by the FAA, which (a) would make Federal aid to airports (at least to new ones) conditional on a satisfactory, enforceable land use plan which can be lawfully carried out and which has been agreed to by the prospective airport owner and operator as well as all of the neighboring governmental entities, and (b) would require termination of all further Federal aid if the plan were not carried out. In each situation the FAA should have the authority to fit theories to facts because, for reasons

previously considered, the situation at each airport is different, and the universal application of some formula for determining how much land should be restricted may, at a particular airport, be legally impossible, prohibitively costly, politically unrealistic, or otherwise inappropriate.

One reason why some such intervention at the Federal level may be required is that a proposed new airport may well be within two or more municipalities or counties, involving several different governmental units. John F. Kennedy International Airport, at New York, is bordered by two counties, by New York City, and by the Town of Hempstead which includes within it 27 separately incorporated villages, not to mention the City of Long Beach, New York, which is surrounded by the Town. The problems of coordination among so many different political entities is obvious, especially since any effort to restrict the use of a community's land or to take it off the tax rolls is likely to be controversial.¹²⁶ However, certain States and local governments in the United States have become more conscious of the importance of recognizing and solving this problem, thanks to the efforts of NANAC and of the FAA and others.

Instead of acquiring the fee to property, it has frequently been suggested that aviation easements be acquired. This has been done at some United States airports and in some situations even as a result of court orders.

One advantage of acquiring avigation easements instead of the fee is that it enables the occupant of the property to continue to occupy it if that is his desire -- and in most of the American lawsuits in this field, even the plaintiffs have not indicated any desire to move, although there have been exceptions, notably Mr. Griggs in the famous Griggs case.¹²⁷ While avigation easements, if properly drawn, should provide a defense to litigation, they do not fulfill the real objective of the land use planning because they do not result in eliminating the noncompatible use. The latter result might be served if the purchase included not only an avigation easement but an option for the airport owner to buy the fee when the property is sold by the current owner.

Another advantage that has been assumed by many is that avigation easements should theoretically cost less than the fee. There is, however, some doubt whether this is generally so. It may be difficult to purchase an avigation easement that is broad enough to embrace all potential use of the air over the property (and is, therefore, adequate protection for the future) without paying almost as much as would be required to buy the property itself and ownership of only such an easement does not enable an airport owner to use, lease, or sell the land for a conforming use and thereby recoup part or all of the investment.

Still another problem, of a legal (but very practical) nature, that has not been investigated because the answer may vary from jurisdiction to jurisdiction is whether an aviation easement would "run with the land" and be binding on subsequent purchasers of the fee. Obviously, acquisitions of aviation easements would not be justifiable if they did not "run with the land".

In order to reduce the cost of implementing land use plans for "affected areas" it has been suggested that an airport owner might acquire the fee interests in properties in such areas and then lease them only to conforming users or sell them subject to the broadest type of aviation easement. In certain situations this may make a lot of economic sense; but before such a course is embarked upon, certain legal facets must be considered, including:

(a) Does the airport owner have adequate power, in all respects, to pursue the proposed course?

(b) If the airport owner has tax-exempt status, would that be affected by using property for non-airport, revenue-producing purposes? (If so, perhaps consideration should be given to a change in the law.)

(c) Under Federal law, would use of airport-owned property for non-airport, revenue-producing purposes bar the airport from Federal aid? (If so,

perhaps the law should be changed in that respect also.)

E. Soundproofing.

All interested in this subject have, of course, watched with keen interest the development and enactment of the United Kingdom plan under which, within certain limits and on carefully worked-out conditions, the government (which owns and operates the airports involved) pays part of the cost of soundproofing or air-conditioning residences within the affected area. The government reimburses itself from airport revenues, including air carrier landing fees and concessionaires' rentals.

While this subject is being considered primarily by Committee No. 5, it should be noted that, at least in the United States, there may be a legal question whether, under the police power, a Building Code could require that all residences within the affected area be soundproofed up to a certain standard. It would seem that a much stronger constitutional law case could be made for Building Codes that required soundproofing of places of public assembly within the "affected areas".

Obviously complaints will not be reduced by this approach that come from farmers or owners of undeveloped land¹²⁸ or from persons whose TV reception is impaired, or

from persons who complain because of interference with outdoor parties and conversation. Accordingly, soundproofing is not likely to meet the problem in much of the United States.

Neither will soundproofing reduce complaints to the extent that they are basically predicated on fear.¹²⁹

Nonetheless it is obviously one of the methods to be explored, and the United States will observe with keen interest how many apply for the benefits under the voluntary soundproofing plan in the United Kingdom and what the effect will be on complaints with respect to airport noise.

Another aspect of this approach that will be observed with interest is the extent, if any, to which it leads to demands for similar soundproofing by persons adjoining highways, railroad tracks, firehouses and other public activities that cause noise annoyance.

F. Tax Reductions.

In Los Angeles, Dallas, and perhaps other American cities, property taxes on residences in the affected areas have been reduced as a means of spreading to the community as a whole some of the financial impact of the noise annoyance on residential property values in the affected area.¹³⁰

In at least Los Angeles this was done on the basis of careful appraisals. Information was gathered in the

affected areas relating to sales, rentals, vacancies, expense items and other factors, and comparisons were then made with properties in the general area that were considered not to be affected. An analysis was made of the relationship of values between the properties inside and those outside the affected areas; and from this analysis a comparative percentage base was established. This percentage was then applied to properties in the affected areas after taking into account the relation of the specific location to the actual touchdown point.

Some such approach as this has the merit of, to a degree, charging the community at large, which derives such great benefit from the existence of the airport, for whatever declines in real estate values are suffered by those in the affected areas. The same end might be achieved to an even greater degree by appraising not only the residential properties adversely affected but also the commercial, business, industrial and other properties in the affected areas which are benefited by the airport, and increasing the assessments on them. In fact, it may be that taxpayers in the community at large would have good cause for complaining that it is illegal not to reappraise upwards the properties whose values are increased by the nearby airport, and, indeed, it is possible (the fact of the matter not being known) that such is being done. However, the publicity has related to

the downward appraisals, not the upward ones.

Another legal consideration in connection with tax reductions is the possibility of empowering the appropriate governmental body to condition any tax reduction on the property owner's giving the airport a broad aviation easement and a stipulation not to participate in any legal proceeding based on the flight of aircraft or the operation of the airport. Without special legislation such power may not exist. Additionally, consideration might be given to empowering the airport to pay to the property owner the amount of the reduction in appraised value on condition that the property owner gives the airport an option to buy the property or an aviation easement, if an effective one is obtainable.

G. Summary of Part III.

In the light of the Introduction and Parts I and II, this Part III has endeavored to focus attention on some of the legal problems that must be taken into account in the United States in achieving conforming uses or noise abatement in affected areas. Unless they comply with the constitutional requirements emphasized in Subdivisions A, B, C and D of this Part III and unless they have the necessary legal authority, the airport owner and the neighboring communities cannot achieve the desired results. While the legal problems discussed are those that may arise at United States airports,

they may at least suggest the types of problems that arise elsewhere.

And again may it be emphasized that, in all nations, it is far better to make even limited efforts to keep open existing open spaces than to defer all activity until a theoretically perfect result is achievable. Indeed, as indicated at the outset of Part III, a theoretically ideal result from the point of view of noise abatement alone may be, in the United States, an unsupportable public invasion of private rights, in addition to costing more money than is likely to be available.

PART IV
CONCLUSION

As seen at the outset, the objective of land use planning around airports is to eliminate, or prevent, in "affected areas", to the greatest practicable extent, places of public assembly and residences (at least for those who do not deliberately choose to live there). As also shown, the problem is one of annoyance, however severe, and this must be borne in mind in weighing the extent to which public expenditures are warranted to reduce or eliminate noise annoyance from aircraft as contrasted with annoyance from superhighways and other public improvements.

Since the circumstances in every "affected area" in the world are different, it is desirable for each local government or governmental agency that owns and operates, or controls the operation of, an airport, or is in an "affected area", to be given as flexible powers as possible to deal with the problem. These should include, among others, power and financial means to acquire property rights in the "affected areas"; power to zone to the extent legally permissible; power to reappraise properties, both upwards and downwards, depending on the facts, for tax purposes, and the power to couple tax reductions with appropriate conditions to the extent legally permissible; power to put properties acquired in fee to revenue-producing, compatible use without jeopardizing the airport's tax status or its

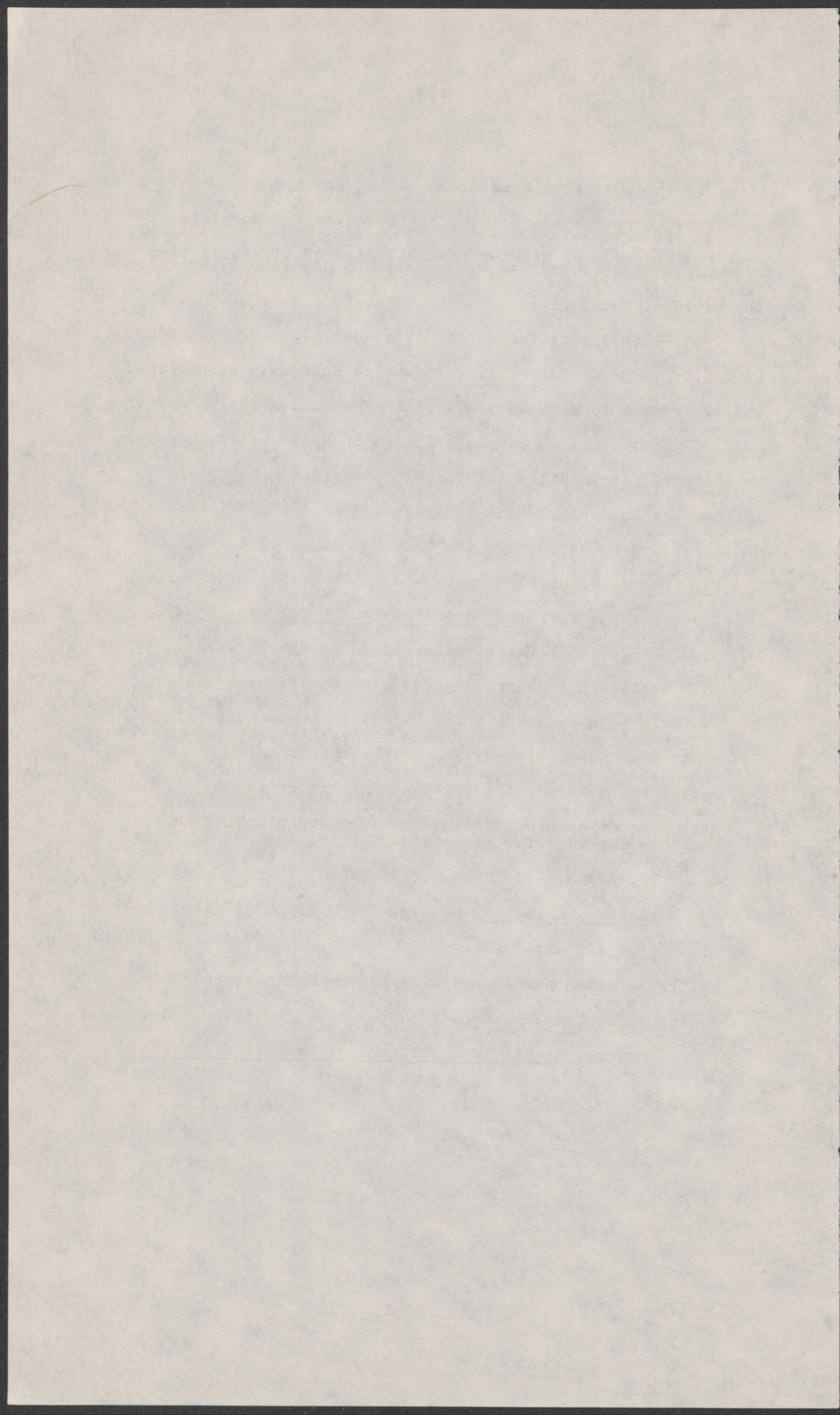
right to receive governmental funds; and the power to decide on a realistic basis which power or combination of powers should be exercised in the particular circumstances.

The minimum that should be done by any civilian jet airport is to acquire those properties in the "affected areas" that have been "taken" under the test laid down by the courts. Even at existing airports this should not involve unduly large expenditures except in one or two States where so much broader a test has been prescribed that it may prove unworkable.

On the other hand, if some of the suggested methods of defining "affected areas" were applied to such airports as John F. Kennedy International Airport in New York, and all properties within the "affected areas" as so defined were to be purchased, the cost would run into billions of dollars.¹³¹ Especially when applied to all "affected areas" near civilian jet airports throughout the United States, or almost any other heavily populated country, any such program of acquisition would be completely unrealistic.

The effort should be, at each existing airport, to make an inventory of real estate plots and their uses within a realistically defined "affected area" and then use such of the above-listed powers as are best suited to the situation to bring about, step-by-step and in a sensible way, compatible land use within such areas. As emphasized above, the first and most obvious such step is to prevent further noncompatible use. With proper local leadership this should be possible at relatively low cost. Although it need scarcely be repeated

it is worth closing this paper by saying again that, when wholly new airports are being planned, advantage ought to be taken of the much greater possibilities of effective land use planning.



FOOTNOTES

1. Federal Aviation Act of 1958, Sec. 307, 72 Stat. 749, 49 U.S.C. § 1348. The FAA was created by the Federal Aviation Act of 1958, Sec. 301(a), 72 Stat. 744, 49 U.S.C. § 1341.

2. Federal Aviation Act of 1958, Sec. 102, 72 Stat. 740, 49 U.S.C. § 1302. The Civil Aeronautics Board was established in its present form by Sec. 201 of the Federal Aviation Act of 1958, 72 Stat. 741, 49 U.S.C. § 1321. It was created, however, by the Civil Aeronautics Act of 1938 under the name "Civil Aeronautics Authority", and redesignated as the Civil Aeronautics Board by Reorganization Plan No. IV of 1940.

3. For a technical summary and bibliography of the FAA's role, see Horonjeff, Planning and Design of Airports, 53-70, 128-34, 152-57 (1962) [hereinafter cited as "Horonjeff"].

4. See the following extract from the Statute:

"(a) In order to bring about, in conformity with the national airport plan . . . the establishment of a nationwide system of public airports adequate to meet the present and future needs of civil aeronautics, the [FAA] administrator is authorized . . . to make grants of funds to sponsors for airport development and for advanced planning and engineering therefor as hereinafter provided."

60 Stat. 171, as amended, 49 U.S.C. § 1103.

5. Griggs v. Allegheny County, 369 U.S. 84 (1962).

6. Horonjeff, at 23-24.

7. Population per square mile in the northeastern United States increased from 241.2 in 1950 to 273.1 in 1960. U.S. Dep't of Commerce, Statistical Abstract of the United States

13 (1965). The average annual per cent increase in the population of the United States from 1950 to 1960 was 1.7 per cent, and from 1960 to 1964 was 1.5 per cent. Id. at 11. However, as Appendices I and II demonstrate, passenger and cargo air travel has increased at an extraordinarily faster rate.

8. Division of State and Regional Planning, New Jersey Department of Conservation and Economic Development, Air Facilities and the Land Use Pattern in New Jersey, 23 (1965) [hereinafter cited as "New Jersey"].

9. A key requirement in developing a master plan is, of course, an estimate of future traffic volumes. This estimate should then be converted into physical requirements, including recommendations for zoning and a financial plan to achieve the recommended development.

Categories of facts to be gathered in estimating airline traffic volumes are summarized by Horonjeff at pages 106-107. For an example of an airport's calculated future demand, documented with local data, see Department of Aviation, A Progressive Plan for the Development of the Aviation Interests of Metropolitan Nashville and Davidson County, 51-78 (1964) [hereinafter cited as "Nashville"].

10. Office of Science and Technology, Executive Office of the President, A Report of the Jet Aircraft Noise Panel, Alleviation of Jet Aircraft Noise Near Airports (1966) [hereinafter cited as "White House Report"] contains three articles

summarizing Federally sponsored research in this field and nine articles concerned with developments in engines, airframes, aircraft utilization and operational procedures, which summarized the vast amount of work done to date in the United States in the effort to reduce aircraft noise at its source.

11. Anchorage City Planning Comm'n, Airport and Urban Planning in the Greater Anchorage Area, v (1961) [hereinafter cited as "Anchorage"].

12. Fresno County and Fresno City Planning Comm'ns, Land Use and the Fresno Air Terminal, 3 (1959) [hereinafter cited as "Fresno"].

13. Id. at 8.

14. New Jersey, at 14.

15. Will Rogers World Airport Land Use Plan, Oklahoma City Planning Commission, 8 (March 1964).

16. San Francisco International Airport, FACT SHEET, 1 (1966) [hereinafter cited as "San Francisco"].

17. Fort Worth Investigation, 31 C.A.B. 803 (1960).

18. "American and Braniff have both recognized that once jet service is provided at Dallas with none at Fort Worth, the traffic at Fort Worth will dry up and cross over to Dallas. That the public is willing to do this attests to the superior advantages of jet service, but it does not justify the failure of the carriers to put in comparable jet service at Carter Field. The Fort Worth passengers are entitled to adequate service at the Fort Worth Airport commensurate with the traffic developed to or from Fort Worth and should not be forced to make the additional ground trip to Love Field in order to receive effective certificated service."

Id. at 808.

19. New Jersey, at 18.

20. San Francisco, at 2.

21. Address by General McKee, New York City, December 15, 1965, in Federal Aviation Agency, Aircraft Noise and Community Relations, 7 (Western Regional Office, 1966).

22. Clare, Stanford Research Institute, Southern California Regional Airports Study, 161 (1964) [hereinafter cited as "Southern California"].

23. See Federal Aviation Agency, op. cit. supra note 21, at 16; House Committee on Interstate and Foreign Commerce, Investigation and Study of Aircraft Noise Problems, H. Rep. No. 36, 88th Cong., 1st Sess. 11-12 (1963) [hereinafter cited as "Harris Report"]. See generally, Lloyd, Noise as A Nuisance, 82 U. Pa. L. Rev. 567 (1934).

24. E.g., Richards v. Washington Terminal Co., 233 U.S. 546 (1914); Beseman v. Pennsylvania R. Co., 50 N.J.L. 235, 13 Atl. 164 (1888); Taylor v. Chicago M. & St. P. R.R. Co., 85 Wash. 592, 148 Pac. 887 (1915); 2 Wood, Law of Nuisances, 151-57, 1063 (3d Ed. 1893).

25. E.g., In re State Highway Route No. 72, 265 Pa. 369, 108 Atl. 820 (1919).

26. E.g., Leitzsey v. Water Power Co., 47 S.C. 464 (1896).

27. E.g., Swetland v. Curtiss Airports Corp., 55 F.2d 201 (6th Cir. 1932); Smith v. New England Aircraft Co., 270 Mass. 511, 170 N.E. 385 (1930); Gay v. Taylor, 19 Pa. D. & C. 31 (Ct. C.P. Chester Cty. 1932).

28. E.g., United States v. Causby, 328 U.S. 256 (1946); Allegheny Airlines, et al. v. Village of Cedarhurst, et al., 238 F.2d 812 (2d Cir. 1956).

29. Testimony of Jack R. Cram, President, NANAC, in "Hearings on Aircraft Noise Problems Before Subcommittees of the House Committee on Interstate and Foreign Commerce, 86th and 87th Cong., 467 (1963) [hereinafter cited as "Harris Committee Hearings", after Congressman Oren Harris, Chairman of the Committee; the "Harris Report" was based on these hearings].

30. Peterson, Airports for Jets, 54 (1959) [hereinafter cited as "Peterson"].

31. News Letter, March 15, 1963, p. 2, published by NANAC.

32. Federal Aviation Agency, Aircraft Noise and Community Relations, 50 (Western Regional Office 1966).

33. Id. at 51.

34. E.g., San Francisco International Airport spent over \$8,300,000 for extension of runways into San Francisco Bay, "making it possible for jets to achieve higher altitude on takeoffs over neighboring communities with resultant reduction in jet noise". San Francisco, at 9.

35. FAA Special Civil Air Regulation No. 438 (Reg. Docket No. 168), issued February 23, 1960.

36. FAA Special Civil Air Regulation SR-442 (Reg. Docket No. 380), issued August 31, 1960; Federal Register, p. 8538, September 3, 1960.

37. FAA, Part 619. Special Airport Traffic Rules. (Reg. Docket No. 301), issued October 24, 1960; Federal Register, p. 10343, October 28, 1960.

38. FAA, Part 60. Air Traffic Rules. (Reg. Docket No. 531; Amendment 60-24), issued September 22, 1961.

39. The Harris Report, at pp. 13-18 and 20-22, gave a good summary of Federal noise reduction efforts up to the date of the Report (February 27, 1963). A more recent summary is contained in various papers in the White House Report as of October, 1965, especially Hubbard, NASA-Sponsored Research Relating to the Airport -- Community Noise Problem; Woodall, FAA Noise Suppression Program; and von Gierke, Air Force Program on Aircraft Noise Control, at pp. 35, 43 and 48, respectively.

40. See the White House Report, referred to in footnote 10, supra.

41. "Aircraft noise is a growing source of annoyance and concern to the thousands of citizens who live near many of our large airports. As more of our airports begin to accommodate jets and as the volume of air travel expands, the problem will take on added dimension.

"There are no simple or swift solutions. But it is clear that we must embark now on a considered effort to alleviate the problems of aircraft noise. To this end, I am today directing the President's science adviser to work with the Administrators of the Federal Aviation Agency and National Aeronautics and Space Administration, and the Secretaries of Commerce, and of Housing and Urban Development, to frame an action program to attack this problem."

Statement by President Johnson in his Transportation message to Congress, March 2, 1966.

42. H.R. 15875 (89th Cong.; 2d Sess.).

43. Harris Report, at 20.

44. Peterson, at 59.

45. See text accompanying notes, 7, 11-20, supra, and Appendices I, II and III.

46. The Harris Report, at p. 25, found:

"2.01. There is no evidence before the subcommittee of any permanent physical injury to persons or extensive physical damage to property as a direct result of noise created by civil transport aircraft."

47. From 1950 to 1963, inclusive, the number of non-occupant fatalities in the United States resulting from accidents of transportation media were approximately as follows:

Automobiles (including taxis).....	121,853
Buses.....	4,908
Railroad passenger trains.....	12,830
Air carrier aircraft (ex- cluding propeller accidents involving nonmoving air- craft).....	38

Eleven of the 38 deaths were in the two Elizabeth, N.J. crashes on January 22 and February 11, 1952. National Aircraft Noise Abatement Council News Letter [hereinafter cited as "NANAC News Letter"] July 1, 1964.

In 1962, FAA Administrator Najeeb Halaby testified:

"I think that many of the citizens whom you gentlemen represent are not just irritated by the noise. They are anxious about being hit. For example, I believe it is very poorly understood that the jet powerplant is now on the average providing [sic] to be a more reliable, that is, less failures, less fatalities, in proportion to its use than the propeller powerplant." Harris Committee Hearings, p. 506.

48. Testimony of Dr. Paul S. Veneklasen in the Harris Committee Hearings, p. 590.

49. George and Burlin, Air Pollution From Commercial Jet Aircraft in Los Angeles County (1960); Public Health Service, U.S. Dep't of Health, Education, and Welfare, A Survey of Air Pollution in the Vicinity of John F. Kennedy International Airport Particularly Relating to Aircraft Emissions (1965).

50. E.g., Walther, The Impact of Municipal Airport on the Market Value of Real Estate in the Adjacent Areas, The Appraisal Journal, January, 1953, p. 15; Walther, Effect of Jet Airports on Market Value of Vicinage Real Estate, The Appraisal Journal, October, 1959, p. 261.

51. Detroit Metropolitan Area Planning Comm'n, Environs Study and Plan -- Detroit Metropolitan Wayne County Airport, 47 (1964) [hereinafter cited as "Detroit -- Wayne"]; Port of New York Authority, Report on Airport Requirements and Site in the New Jersey-New York Metropolitan Region, 6 (1961); San Francisco, at 5; Wichita -- Sedgwick County Metropolitan Area Planning Dep't, Airport and Land Use in the Wichita Metropolitan Area, 8 (1961); Fresno, at 16; New Jersey, at 27.

52. Statistical Abstract of the United States, 1964, pp. 12 and 16.

53. E.g., Dulles International Airport has not eliminated Washington National Airport and O'Hare International Airport (Chicago) has not eliminated Midway. It has been argued that, based upon studies of the number of short-haul, medium-haul, and long-haul flights and the length of the flights in relation to the ground time, the larger metropolitan areas should plan for one large long-haul jet airport in the outer regions and smaller fields, including the older one, around a central business district, rather than a number of large general-purpose airports in the outlying regions. Jordan, Airport Location In Relation To Urban Transport, 88 Journal of the Aero-Space Transport Division, Proceedings of the American Society of Civil Engineers, 99 (1962).

54. Horonjeff, at 15.

55. Id. at 35-36.

56. Id. at 17.

57. Id. at 36.

58. Ibid.

59. Ibid.

60. Federal Aviation Agency, FAA Statistical Handbook of Aviation, 12 (1965).

61. Horonjeff, at 41-42.

62. Harris Committee Hearings, pp. 667-8.

63. Horonjeff, at 41.

64. Horonjeff, at 45.

65. See Horonjeff, at 42-44.

66. There are also other Federal agencies which provide financial assistance in the form of loans and grants to local units of governments for a variety of purposes which may be airport-related, such as highways, urban redevelopment, open spaces, conservation, and recreation.

67. Horonjeff, at 50-51.

68. Some cities, such as Detroit, Fresno and Oklahoma City, had the foresight to draw master plans to integrate an airport with the neighboring area. Detroit; Fresno; Development Planning Associates Inc., Oklahoma City Airports Development Prospects and Land Use Plans (1963). However, in Fresno at least, subsequent developments necessitated drastic retrenchments in the city's position relative to land use control. Oklahoma City's plan "to protect Will Rogers World Airport" is reported to have been more successful.

69. For example, in the Bay area, the substantial Flamingo Apartments were built in Bayside Manor, Millbrae, at the south end of runway 1 at the San Francisco International Airport, even though residents of Millbrae who live in the same neighborhood were suing the city and county of San Francisco because of the airport noise. The apartments that faced the airport were "semisoundproofed"; they rented first, at higher initial rents; and there is rarely a vacancy in them.

In the area just south of the Seattle-Tacoma Airport, where over 196 property owners brought suits, a

development of about 16 homes was being built while the cases were pending.

Many thousands of residential units have been under construction near Kennedy Airport while "noise litigation" has been pending.

70. The Federal Airport Act was amended in 1964 to provide for coordination between airport projects and local comprehensive planning, by requiring that:

" . . . appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal aircraft operations including landing and take-off of aircraft."

78 Stat. 161, 49 U.S.C. § 1110(4).

71. Newnam, Houston's Jetero Airport: Location and Configuration, 14 (1963).

72. The Sacramento Metropolitan Airport is scheduled for completion in the early fall of 1967. For the plan upon which the airport was originally based, see Sacramento County Planning Comm'n, Metropolitan Airport . . . Natomas Area Plan (1961) [hereinafter cited as "Sacramento"]. For a more recent and more detailed plan also based upon the 1961 report, see Sacramento Metropolitan Airport Planners, Sacramento County Airport-The Comprehensive Overall Master Plan (1964) [hereinafter cited as "Sacramento-Master Plan"].

73. This is essential. See the reasons given by the FAA for its rejection of restrictions on nighttime operations

in its introductory comments to Special Civil Air Regulations Nos. 438 and SR-442, cited in footnotes 35 and 36, supra. See also the testimony of John R. Wiley, Director of Aviation, Port of New York Authority, in Harris Committee Hearings, pp. 528-530.

74. Wall Street Journal, August 22, 1966, p. 1.

75. Numerous technical studies have been made concerning the selection of an additional site for a New York jet airport, but no site has yet been selected. Veerling, Quest For An Airport In New Jersey-New York Area, 92 Journal of the Aero-Space Transport Division, Proceedings of the American Society of Civil Engineers, 21-22 (1966) [hereinafter cited as "Veerling"].

76. Cleveland has considered converting a downtown general aviation airport into a new jetport by extending runways over Lake Erie. This would require a massive fill-in at an estimated cost of \$200,000,000. Aviation Daily, July 12, 1966, p. 66. Not everyone has favored the airport. Rep. Charles A. Vanik (D-Ohio) estimates that \$365,000,000 will be needed to complete the airport, and that so large a sum will not be available. Aviation Daily, July 18, 1966, p. 98.

77. The Anchorage report recommended that no new airport be built in the next decade. Anchorage, at 23.

78. The best available text on the general subject is Horonjeff which has a chapter on site selection with a bibliography that includes references to technical publications. For a shorter less technical text, see, Peterson.

79. Horonjeff, at 127-28; Veerling, at 23-28. The major reason for the recommendation that a new airport not be built in the Anchorage, Alaska area was lack of open air space. Anchorage, at 23.

80. For example, there are over 200 air installations, including 187 private airports, 3 Federal military air bases and 1 major commercial jet airport in New Jersey. New Jersey, at 7-9. There are two major jet airports, one civil and one military, and three secondary airports in the immediate Oklahoma City area. Hudgins, Thompson, Ball and Associates, Oklahoma City Airports Master Plans and Development, map following p. II-2 (1963).

81. The routes and maneuver areas of the New York area airports merge with the similar complex required in the Philadelphia area. Veerling, at 23-25.

82. E.g., Peterson, at 53.

83. Horonjeff, at 128-34; Peterson, at 53.

84. Horonjeff, at 126, 136-42; Peterson, at 61. A wind rose must be made in order to successfully design runway configurations. Ibid. For examples of specific wind roses, see Sacramento, at 42; Detroit-Wayne, at 44; Nashville, at 23; Newnam, at 15.

85. Horonjeff, at 127; Peterson, at 55-59; Southern California, at 31-32; Veerling, at 28-31. Veerling points out, "as an airport may be less accessible, significant numbers of travelers preferring air transport will use other

means of transportation or substitute use of communication."
Veerling, at 28-29.

86. Jordan, Airport Location In Relation To Urban Transit, 88 Journal of the Aero-Space Transport Division, Proceedings of the American Society of Civil Engineers, 99 (1962); Hammel, Airport Location In Relation To Urban Transport, 89 Journal of the Aero-Space Transport Division, Proceedings of the American Society of Civil Engineers, 95, 96 (1963); Cf. Southern California, at 146.

87. Boston is the only major United States city which is connected by rail with its airport. Roggeveen and Hammel, Ground Transport Of People To And From The Civil Airport, 85 Journal of the Air Transport Division, Proceedings of the American Society of Civil Engineers, 37, 44, 48 (1959).

88. Roggeveen and Hammel, supra, note 87, at 42; Veerling, at 28.

89. Roggeveen and Hammel, supra, note 87, at 52.

90. Peterson, at 56-57; Cf. Veerling, at 30, 33 (1-1/2 hours travel time completely unrealistic).

91. A recent study has concluded:

"The facts support a conclusion that changes in airport location cause sharp reduction in passenger generation. For example, a ten mile change appears to result in approximately a 40% change as a general average."

Brown, Airport Accessibility Affects Passenger Development, 91 Journal of the Aero-Space Transport Division, Proceedings of the American Society of Civil Engineers, 47, 58 (1965).

92. The Dulles International Airport handled only 782,250 passengers (arrivals and departures) and had 131,726 total aircraft operations in 1964. Washington National Airport in the same year handled 6,188,292 passengers and 290,640 total aircraft operations. Federal Aviation Agency, FAA Statistical Handbook of Aviation, 13, 15 (1965).

93. For example, the Port of New York Authority could construct an airport at two of the new sites suggested, Bowling Green Mountain or Bearfort, only if it were subsidized by amounts exceeding 300 to 400 million dollars, because of the huge acquisition and construction cost in those areas. It has been doubted that such a sum would be available. Veerling, at 31.

94. The Dulles International Airport example shows how complicated it may be to secure adequate heat, light, power and sewage disposal in a rural area. See Ammann & Whitney, Dulles International Airport--Master Plan, 39-45 (1964).

95. "Combining the many factors of terrain, glide-paths, turning movements and urban development, it is recommended that no new Air Carrier airport or General Aviation airport be constructed within the Greater Anchorage Area. To introduce additional airports within existing air traffic patterns would present serious problems in air safety. In fact, any additional fields would have the effect of reducing the capacities of the existing fields by further complicating the traffic control picture. This would cause unnecessary delays. The problem, therefore, is how can Anchorage meet the projected 1980 air operations without additional airfields being located within its metropolitan area?"

Anchorage, at 23 (emphasis in original quote).

96. See footnote 73, supra.

97. "Of considerable significance during the conduct of the study was frequent contact and consultation with various local officials of Romulus Township. The school district authorities desired help on their long-range school construction program. The township engineer needed a general framework of anticipated land uses for guidance in laying out major trunklines for water and sewer services. The planning commission and its consultants were concerned about the over-all pattern of plan uses as the study began to provide the means for shaping the pattern of compatible land use development. All were deeply concerned by the recent expansion of the airport and the resulting effects of jet aircraft operations on the community. Noise, of course, was one of the major points of their attention, but they were also disturbed by the seemingly continuous expansion of the airport in land area. Over the years, this process had deprived the Township of a considerable portion of its tax base. Further, it had divided the Township into several segments and thus broken it up as a physical community.

"The deep interest, earnest cooperation, and cordial working relationships of all these agencies and officials formed a continuing and valuable factor in the conduct and primings of the study. All were bound together in the project by a common concern for the achievement of compatibility between the airport and the community as neighbors, for the safety of people on the ground and in planes, and for the advance of both the airport and the community."

Detroit-Wayne, at 6.

Although this quotation was taken from a plan for expanding an existing airport it is equally applicable to development of new airports.

The planning and operating problems, as well as the intercommunity influence, have led some municipalities to employ the "authority" or "special district." See, Arde, Inc.

and Town and Country, Inc., A Study of the Use of Land Exposed to Aircraft Landing and Takeoff Noise, at 23-27 (NASA Contractor Report, 1966).

98. Yokley, Zoning Law and Practice, Chap. II (3d Ed. 1965); 58 Am. Jur., Zoning §§ 14-24; Note, The Validity of Airport Zoning Ordinances, 1965 Duke Law Jour. 792-93 (1965).

99. United States v. Causby, 328 U.S. 256 (1946).

100. See footnote 47, supra.

101. United States v. Causby, supra; Griggs v. Allegheny County, 369 U.S. 84 (1962).

102. See this author's paper entitled Noise Litigation at Public Airports, at p. 117, in the White House Report, especially at pp. 123-128.

103. E.g., Avery v. United States, 330 F.2d 640 (Ct. Cl. 1964); Batten v. United States, 306 F.2d 580 (10th Cir. 1962), cert. denied 371 U.S. 955 (1963).

104. Thornburg v. Port of Portland, 233 Ore. 178, 376 P.2d 100 (1962). Although the Supreme Court of Oregon did hold that overflights were not a prerequisite to recovery, on remand the jury found for the defendant Port of Portland. On a subsequent appeal in the Thornburg case, the Supreme Court of Oregon also seems to have modified, to a degree difficult to ascertain, its prior view that the deprivation must be "substantial". Thornburg v. Port of Portland, 9 Av. Cas. 18,248 (June 22, 1966).

Two lower courts in the State of Florida have also recently taken a more relaxed view of what constitutes a taking. Jacksonville v. Schumann, 167 So.2d 95 (Ct. App., 1st Dist. Fla. 1964); Benitez v. Hillsborough County Aviation Authority, No. 139928, Div. G, Cir. Ct. 13th Cir., Hillsborough Cty, Fla., Jan 18, 1966. Since two other recent lower court decisions in Florida require "substantial" interference the decision of that State's highest court is awaited with interest. Corbett v. City of Jacksonville, No. 63-2246-E, Div. J, Cir. Ct., 4th Cir., Duval Cty, Fla., Dec. 10, 1965; Schumann v. City of Jacksonville, No. 63-4547-E, Div. E., Cir. Ct., 4th Cir., Duval Co., Florida, Jan. 26, 1966. For a scholarly analysis that supports the more general view that "invasion and exclusionary possession of the airspace" over the land in question is a prerequisite to a "taking", see Spater, Noise and the Law, 63 Mich. Law Rev. 1373 (1965).

105. See 2 Nichols, Eminent Domain § 6.1[3] (Rev. 3d Ed. 1963), which lists 25 states. Alaska also has such a provision.

106. Martin v. Port of Seattle, 391 P.2d 540, 8 Av. Cas. 18,324 (Wash. 1964), cert. denied 379 U.S. 989 (1965).

2 Nichols, Eminent Domain (3d Ed. 1950), at §§ 6.441-3, discusses the definition of "damage" under such provisions and concludes, with explanation as to the various courts' reasoning, that in most jurisdictions the definition used is narrower than simply "any public use of land which caused an actual ascertainable depreciation of the present market value of neighboring land." In the Martin case this

broader definition was applied even though Nichols, supra (at p. 490), cites three prior Washington Supreme Court cases as following a narrower definition. None of these three cases were cited in the Martin opinion. They were Smith v. St. Paul, M. & M. Ry. Co., 39 Wash. 355, 81 Pac. 840 (1905); Hieber v. City of Spokane, 73 Wash. 122, 131 Pac. 478 (1913); and Taylor v. Chicago M. & St. P. R. Co., 85 Wash. 592, 148 Pac. 887 (1915).

107. People v. Symons, 54 Cal.2d 855, 357 P.2d 451, 455 (1960).

108. See Sax, Taking and the Police Power, 74 Yale L. J. 36, 40-46, 50-60, 63 (1964) and cases cited therein.

109. Euclid v. Ambler, 272 U.S. 365 (1926).

110. E.g., Indiana Tool Road Commission v. Jankovich, 244 Ind. 574, 193 N.E.2d 237 (1963), cert. dismissed 379 U.S. 487 (1965); Grosso v. Board of Adjustment, 137 N.J.L. 630, 61 A.2d 167 (1948); State ex rel. George v. Hull, 65 Wyoming 251, 199 P.2d 832 (1948); Vartelas v. Water Resources Commission, 146 Conn. 650, 153 A.2d 822 (1959).

111. Strunck, Airport Zoning and Its Future, 50 American Bar Association Journal 345 (1964).

112. Indiana Toll Road Commission v. Jankovich, supra, (unconstitutional); Roark v. City of Caldwell, 87 Idaho 557, 394 P.2d 641 (1964) (unconstitutional); Yara Engineering Corp. v. City of Newark, 132 N.J.L. 370, 40 A.2d 559 (1945), and Rice v. City of Newark, 132 N.J.L. 387, 40 A.2d 561 (1945)

(unconstitutional because not authorized by state enabling statute). The lower courts of two other states similarly found such ordinances unconstitutional. Dutton v. Mendocino County, 1949 U.S. Av. 1 (Cal. Super. Ct. 1948); Mutual Chemical Co. of America v. Mayor of Baltimore, 1939 U.S. Av. 11 (Md. Cir. Ct. 1939).

One ordinance has been held unreasonable as applied, although not unconstitutional per se. Banks v. Fayette County Board of Airport Zoning Appeals, 313 S.W.2d 416 (Ky. 1958).

Perhaps it is because only the hardship cases have gone to court, that there appears to be only one State, Florida, which has specifically found such ordinances to be a constitutional exercise of zoning power. Harrell's Candy Kitchen v. Sarasota-Manatee Airport Authority, 111 So.2d 439 (Fla. 1959); Waring v. Peterson, 137 So.2d 268 (Fla. Dist. Ct. of Appeals 1962). In one other state such an ordinance was found to be valid on the ground that it provided for adequate compensation in case there was a taking. Baggett v. City of Montgomery, 160 So.2d 6 (Ala. 1963).

113. In its opinion in the Jankovich case cited in the preceding footnote, the United States Supreme Court said that the Indiana Supreme Court decision did "not portend the wholesale invalidation of all airport zoning laws." 379 U.S. at p. 493.

114. There have, however, been a few cases that have involved zoning in airport areas where land use restrictions

accompanied height restrictions. In each the ostensible purpose was the protection of runway approach zones from hazard. In two of the three cases the land use restriction was held to be invalid, and in the third it was held valid only because compensation was provided in case of a taking. Roark v. City of Caldwell (Idaho, invalid); Banks v. Fayette County Board of Airport Zoning Appeals (Kentucky, invalid); Baggett v. City of Montgomery (Alabama, valid), all cited in footnote 112.

115. Roney v. Board of Supervisors, 138 Cal. App.2d 740, 292 P.2d 529 (1956) (valid to prohibit residential development in heavy industry zone); Lamb v. City of Monroe, 358 Mich. 136, 99 N.W.2d 566 (1959).

116. Corthouts v. Town of Newington, 140 Conn. 284, 99 A.2d 112 (1953) (ordinance invalid, but court upheld principle of non-cumulative zoning in dictum); Kozesnik v. Montgomery Township, 24 N.J. 154, 131 A.2d 1 (1957) (invalid but not because of non-cumulative nature of ordinance); Katobimar Realty Co. v. Webster, 20 N.J. 114, 118 A.2d 824 (1955) (invalid because of unreasonable exclusion); Comer v. City of Dearborn, 342 Mich. 471, 70 N.W.2d 813 (1955) (invalid as applied because unreasonable and arbitrary); Gruber v. Mayor and Township Committee, 73 N.J. Super. 120, 179 A.2d 145 (1962); see also Opgal, Inc. v. Burns, 189 N.Y.S.2d 606 (S. Ct. 1959); Dooley v. Town Plan and Zoning Commission, 197 A.2d 770 (Conn. 1964); Horn Construction Co. v. Town of Hempstead, 41 M.2d 438, 245 N.Y.S.2d 614 (S. Ct. 1963).

117. Arverne Bay Construction Co. v. Thatcher, 278 N.Y. 222, 15 N.E.2d 587 (1938); Frankel v. City of Baltimore, 223 Md. 97, 162 A.2d 447 (1960); Horn Construction Co. v. Town of Hempstead, 41 M.2d 438, 245 N.Y.S.2d 614 (S. Ct. 1963). There is, however, some doubt as to what constitutes a taking requiring compensation. Compare Goldblatt v. Town of Hempstead, 369 U.S. 590 (1962); Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922); and Consolidated Rock Products Co. v. Los Angeles, 57 Cal.2d 515, 370 P.2d 342, appeal dismissed 371 U.S. 36 (1962).

118. See e.g. Consolidated Rock Products Co. v. Los Angeles, supra footnote 117.

119. See the Yara and Rice cases (New Jersey) cited in footnote 112, supra.

120. Subject to the limitations previously mentioned.

121. For an extremely interesting case history of zoning at an existing airport, see Strunck, An Analysis of the Advantages and Difficulties of Zoning Regulations for Chicago O'Hare International Airport, White House Report, p. 151. Mr. Strunck points to some of the collateral advantages to the airport and the community which have resulted from the very effort to have effective zoning.

122. E.g., Cole v. LaGrange, 113 U.S. 1 (1885); Missouri P. R. Co. v. Nebraska, 164 U.S. 403 (1896); Charlotte v. Heath, 226 N.C. 750, 40 S.E.2d 600 (1946). See 26 Am. Jur.2d, Eminent Domain, §§ 25-27.

123. City of Carlsbad v. Ballard, 378 P.2d 814, 8 Av. Cas. 17,492 (N.M. Super. 1963); Johnson v. Consolidated Gas, E.L.

& P. Co., 187 Md. 454, 50 A.2d 918 (1947); United States v. 91.69 Acres, 334 F.2d 229 (5th Cir. 1964) (discretion to take more than necessary for public use when for public protection and safety).

124. City of Carlsbad v. Ballard, supra.

125. See especially 49 U.S.C.A. § 1112.

126. See the article by Strunck cited in footnote 121, supra.

127. Griggs v. Allegheny County, 369 U.S. 84 (1962).

It is an amusing commentary on the Griggs situation that, according to Time Magazine for March 16, 1962, at page 65, Mr. Griggs sold his house and 5 acres in 1956 "to the St. Philip's Episcopal Church (whose congregation has since been bothered only a few times on Sunday mornings; when that happens, says Pastor Donald Clawson, 'we simply stop and say a little silent prayer for the pilot').".

128. 13 of the 27 noise cases decided in the United States from 1955 to 1965 involved farmers as distinguished from city residents and 4 more involved owners of undeveloped land. This is based on an analysis of the cases cited in footnotes 53-55 on pp. 123-24 of the White House Report. On the other hand, of the known cases now pending in the United States, only about 20% involve farmers or owners of undeveloped land.

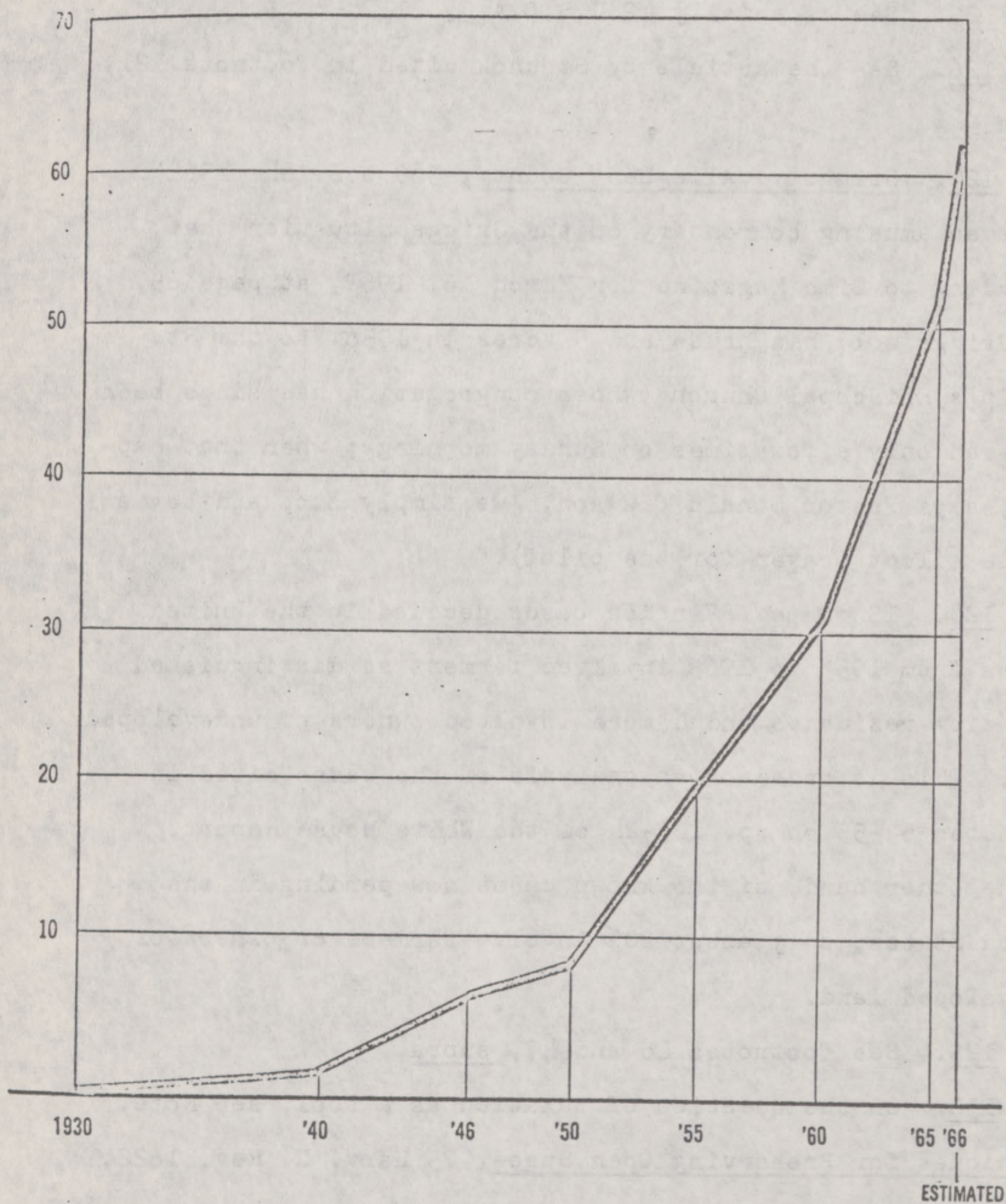
129. See footnotes 48 and 47, supra.

130. On the question of taxation as a tool, see Note, Techniques for Preserving Open Space, 75 Harv. L. Rev. 1622, 1641-42 (1962).

131. See footnote 62, supra.

SCHEDULED DOMESTIC AIRLINE
REVENUE PASSENGER MILES

(IN BILLIONS)



Source: Air Transport Association of America

DOMESTIC INTERCITY CARGO TON MILES

<u>YEAR</u>	<u>AIR</u> <u>(millions)</u>
1950	274
1951	308
1952	319
1953	337
1954	336
1955	428
1956	493
1957	609
1958	614
1959	709
1960	749
1961	867
1962	1,155
1963	1,100
1964	1,294
1965	1,669

Source: Air Transport Association of America

SCHEDULED DOMESTIC AIRLINE SHARE
OF INTERCITY COMMON CARRIER MARKET

<u>YEAR</u>	<u>% AIR</u>	<u>% RAIL</u>	<u>% BUS</u>
1940	3.2%	35.8%	61.0%
1946	6.7%	65.0%	28.3%
1950	14.2%	47.9%	37.9%
1955	30.3%	36.3%	33.4%
1960	45.3%	25.2%	29.5%
1965	59.2%	14.9%	25.9%

Source: Air Transport Association of America

CIVILIAN JET AIRPORTS IN THE UNITED STATES
AS OF JANUARY 1, 1966

<u>Location</u>	<u>Name of Airport</u>	<u>Owner and Operator</u>	<u>Distance from Nearest City Center</u>	<u>Date of First Use of Airport</u>
Akron/Canton, Ohio	Akron-Canton Airport	Akron Canton Regional Airport Authority	14.0	1947
Albuquerque, New Mexico	Albuquerque Sunport	City	4.0	1941
Amarillo, Texas	Amarillo AFB/ Municipal Airport	U. S. Gov't (City owns 27 acres in terminal area; has joint use agreement for use of runways)	10.0	1937
Anchorage, Alaska	Anchorage Int'l Airport	State	6.0	1951
Atlanta, Georgia	Atlanta Airport	City	10.0	1938
Augusta, Georgia	Bush Field	City	10.0	1943
Austin, Texas	Robert Mueller Municipal	City	4.0	1938
Baltimore, Maryland	Friendship Int'l	City	32.0	1950
Bangor, Maine	Dow Air Force Base	U. S. Gov't	4.0	1941
Baton Rouge, Louisiana	Ryan Airport (formerly Harding Field)	East Baton Rouge Parish	8.0	1944

Appendix IV

Source: Data assembled by Air Transport Association of America

<u>Location</u>	<u>Name of Airport</u>	<u>Owner and Operator</u>	<u>Distance from Nearest City Center</u>	<u>Date of First Use of Airport</u>
Billings, Montana	Billings Logan Field	City	5.0	1944
Binghamton, New York	Broome County Airport	Broome County	11.0	1950
Birmingham, Alabama	Birmingham Municipal	City	5.0	1931
Bismarck/ Mandan, North Dakota	Bismarck Municipal	City	2.0	1937
Boise, Idaho	Boise Air Terminal	City	5.0	1938
Boston, Mass.	Logan Int'l Airport	Massachusetts Port Authority	4.0	1922
Brownsville, Texas	Rio Grande Valley Int'l Airport	City	5.0	1928
Buffalo, New York	Greater Buffalo Int'l Airport	Niagara Frontier Port Authority	9.0	1926
Burbank, California	Lockheed Air Terminal	Lockheed Air Terminal, Inc.	4.0	1930
Burlington, Vermont	Burlington Municipal	City	3.5	1929
Charleston, So. Carolina	Charleston AFB Municipal	U. S. Gov't and City	11.5	1937
Charlotte, No. Carolina	Douglas Municipal	City	6.0	1928
Chattanooga, Tennessee	Lovell Field	City	10.0	1937