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AIRCRAFT NOISE ABATEMENT REGULATION

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HEARING

BEFORE THE

AVIATION SUBCOMMITTEE

OF THE

COMMITTEE ON COMMERCE

UNITED STATES SENATE

NINETIETH CONGRESS

SECOND SESSION

ON

S. 707 and H.R. 3400

TO AMEND THE FEDERAL AVIATION ACT OF 1958, TO AUTHORIZE AIRCRAFT NOISE ABATEMENT REGULATION, AND FOR OTHER PURPOSES

JUNE 17, 1968

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AIRCRAFT NOISE ABATEMENT REGULATION

MONDAY, JUNE 17, 1968

U.S. COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON AVIATION,
Washington, D.C.

The committee met at 11:05 a.m. in room 6202, New Senate Office Building, the Honorable A. S. Mike Monroney presiding.

Present: Senators Monroney and Pearson.

OPENING STATEMENT BY THE CHAIRMAN

Senator MONRONEY. The subcommittee will please be in order. This morning the Aviation Subcommittee of the Senate Committee on Commerce opens hearings on two bills which would amend the Federal Aviation Act to authorize aircraft noise abatement regulation, and for other purposes.

S. 707, introduced at the request of the administration, would empower the Secretary of Transportation to prescribe standards for the measurement of aircraft noise and sonic boom and to issue regulations for their control and abatement. The regulations could then be applied to aircraft certification procedures. H.R. 3400, which 1 week ago passed the House of Representatives with no dissenting votes, would direct and require the Administrator of the Federal Aviation Administration to set aircraft noise abatement standards, taking into consideration the economic and technological feasibility of any proposed standard. Both bills provide for review by the National Transportation Safety Board.

The Transportation and Aeronautics Subcommittee of the House Interstate and Foreign Commerce Committee held 7 days of hearings on this legislation. The need for noise abatement legislation has been made, clearly and convincingly. Our purpose now is to insure that only the best possible means of dealing with the problem is enacted into law. The proposals before us today are different and both might require some improvement.

At this point in the record we will include the provisions of S. 707 and H.R. 3400, and the comments on the two bills from the various departments and agencies.

(The provisions of S. 707 and H.R. 3400 along with comments from other various departments and agencies follow:)

Staff member assigned to this hearing: Mark Hutcheson.

[S. 707, 90th Cong., first sess.]

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

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

"Aircraft Noise Control and Abatement

"(a) The Secretary of Transportation is empowered to prescribe and amend standards for the measurement of aircraft noise and sonic boom and to prescribe and amend such rules and regulations as he may find necessary to provide for the control and abatement of aircraft noise and sonic boom, including the application of such standards, rules, and regulations in the issuance, amendment, modification, suspension, or revocation of any certificate authorized by this title.

"(b) In any action to amend, modify, suspend, or revoke a certificate wherein violation of aircraft noise or sonic boom standards, rules, or regulations is at issue the certificate holder shall have the same notice and appeal rights as are contained in section 609, and in any appeal to the National Transportation Safety Board, the Board may amend, modify, or reverse the Secretary's order if it finds that safety in air commerce or air transportation and the public interest do not require the affirmation of the Secretary's order."

[H.R. 3400, 90th Cong., second sess.]

AN ACT To amend the Federal Aviation Act of 1958 to require aircraft noise abatement regulation, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title VI of the Federal Aviation Act of 1958 (49 U.S.C. 1421–1430) is amended by adding at the end thereof the following new section:

"Control and Abatement of Aircraft Noise and Sonic Boom

"Sec. 611. (a) In order to afford present and future relief and protection to the public from unnecessary aircraft noise and sonic boom, the Administrator of the Federal Aviation Administration, after consultation with the Secretary of Transportation, shall prescribe and amend standards for the measurement of aircraft noise and sonic boom and shall prescribe and amend such rules and regulations as he may find necessary to provide for the control and abatement of aircraft noise and sonic boom, including the application of such standards, rules, and regulations in the issuance, amendment, modification, suspension, or revocation of any certificate authorized by this title.

"(b) In prescribing and amending standards, rules, and regulations under this section, the Administrator shall—

"(1) consider relevant available data relating to aircraft noise and sonic boom, including the results of research, development, testing, and evaluation activities conducted pursuant to this Act and the Department of Transportation Act;

"(2) consult with such Federal, State, and interstate agencies as he deems appropriate;

"(3) consider whether any proposed standard, rule, or regulation is consistent with the highest degree of safety in air commerce or air transportation in the public interest;

"(4) consider whether any proposed standard, rule, or regulation is economically reasonable, technologically practicable, and appropriate for the particular type of aircraft, aircraft engine, appliance, or certificate to which it will apply; and

"(5) consider the extent to which such standard, rule, or regulation will contribute to carrying out the purposes of this section.

"(c) In any action to amend, modify, suspend, or revoke a certificate in which violation of aircraft noise or sonic boom standards, rules, or regulations is at

issue, the certificate holder shall have the same notice and appeal rights as are contained in section 609, and in any appeal to the National Transportation Safety Board, the Board may amend, modify, or reverse the order of the Administrator if it finds that control or abatement of aircraft noise or sonic boom and the public interest do not require the affirmation of such order, or that such order is not consistent with safety in air commerce or air transportation."

SEC. 2. That portion of the table of contents contained in the first section of the Federal Aviation Act of 1958 which appears under the center heading "TITLE VI—SAFETY REGULATION OF CIVIL AERONAUTICS" is amended by adding at the end thereof the following:

"SEC. 611. Control and abatement of aircraft noise and sonic boom."

CIVIL AERONAUTICS BOARD,
Washington, D.C. March 9, 1967.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your letter of February 1, 1967, requesting the views of the Board with respect to S. 707, a bill "To amend the Federal Aviation Act of 1958 to authorize aircraft noise abatement regulation, and for other purposes."

S. 707, which is identical to draft legislation submitted to the Congress by the Federal Aviation Agency, would empower the Secretary of Transportation to prescribe aircraft noise and sonic boom standards, rules, and regulations in a manner similar to that now authorized under the Federal Aviation Act with respect to standards, rules, and regulations required in the interest of safety. Noise and sonic boom standards would be enforced in the same manner as safety standards are enforced. Certificate holders whose certificates were the subject of adverse actions for violations of such standards would have the same appeal rights as are provided by section 609 of the Act. However, appeals would be made to the National Transportation Safety Board in view of the transfer to such Board of the safety and accident investigation functions of the Civil Aeronautics Board, under titles VI and VII of the Act, upon the effective date of the Department of Transportation Act.

The Board is greatly interested in the abatement of aircraft noise and sonic boom, and favors the enactment of S. 707.

The Board has been advised by the Bureau of the Budget that there is no objection to the submission of this report from the standpoint of the Administration's program.

Sincerely yours,

CHARLES S. MURPHY,
Chairman.

DEPARTMENT OF STATE,
Washintgon, D.C., July 18, 1967.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate.

DEAR MR. CHAIRMAN: I refer to your letter of February 1, 1967, requesting the comments of the Department of State on S. 707, to amend the Federal Aviation Act of 1958 to authorize aircraft noise abatement regulation, and for other purposes.

The Department favors passage of S. 707, since it permits, in the public interest, the control of aircraft noise problems. The forthcoming introduction of new types of aircraft, including the Anglo-French supersonic transport (Concorde) and our own SST, and the increasing air traffic into airports located in congested residential areas, require that the United States be able to effectively control aircraft noise and sonic boom, in regard to foreign as well as domestic aircraft. Since the United States expects to exercise this control, it is important that there be clear statutory authority for so doing. This bill will provide that authority.

The Bureau of the Budget advises that from the standpoint of the Administration's program there is no objection to the submission of this report.

Sincerely yours,

WILLIAM B. MACOMBER, JR.,
Assistant Secretary for Congressional Relations.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
July 19, 1967.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 1, 1967, for a report on S. 707, a bill "To amend the Federal Aviation Act of 1958 to authorize aircraft noise abatement regulation, and for other purposes."

The bill would amend the Federal Aviation Act of 1958, as amended, to authorize the Secretary of Transportation to prescribe and amend standards for the measurement of aircraft noise and sonic boom and to prescribe and amend such rules and regulations as he may find necessary to provide for the control and abatement of aircraft noise and sonic boom.

We are in accord with the broad objectives of this legislation but defer to the views of the Secretary of Transportation concerning its specific provisions. This Department, through the Public Health Service, is concerned with the health effects and implications of noise on the individual and community, including aircraft noise, and believes it could be of considerable assistance to the Secretary of Transportation in establishing the standards for the measurement of aircraft noise and the regulations to control such. We believe that the health aspects of noise control should be a primary concern in establishing the program which would be authorized by this legislation. We would therefore expect to cooperate with the Secretary of Transportation in implementing S. 707, should it be enacted.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely,

WILBUR J. COHEN,
Under Secretary.

DEPARTMENT OF THE AIR FORCE,
Washington, August 11, 1967.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate.

DEAR MR. CHAIRMAN: Reference is made to your request to the Secretary of Defense for the views of the Department of Defense with respect to S. 707, a bill "To amend the Federal Aviation Act of 1958 to authorize aircraft noise abatement regulation, and for other purposes." The Department of the Air Force has been designated to express the views of the Department of Defense.

The Department of Defense is vitally interested in aircraft noise abatement and is presently conducting research and development related to noise reduction. However, supersonic flight introduces still another noise disturbance—the sonic boom—a phenomenon for which no noise suppression system has been devised. The requirement for supersonic equipment and its use on a continuously expanding scale is an absolute military necessity. The provisions of this bill imply application to any or all aircraft and, being broad in scope, pose a potential threat to the flexibility of ground and air operation of military aircraft.

The Department of Defense would defer to the views of the Department of Transportation concerning the relative desirability of the above bill. We would recommend, if any such bill is favorably considered, that it be amended so as to apply only to civil aircraft.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee.

Sincerely,

ALEXANDER H. FLAX,
Assistant Secretary,
Research and Development.

Our first witness this morning is the Hon. Clifford P. Case, senior Senator from the State of New Jersey.

I am happy to welcome my colleague. Please sit here at the rostrum. We will be glad to have your testimony.

STATEMENT OF HON. CLIFFORD P. CASE, A U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator CASE. Thank you, Mr. Chairman.

Members of the committee, first I want to say I commend the committee for what is not at all unusual in connection with this committee—taking time by the forelock in meeting the problem now which will be on us in a very heavy way almost before we know it. As a matter of fact, the problem is very grave already.

I was thinking, when I said what I did, more of the supersonic plane; this is coming so fast, and it would be a matter particularly of my own interest in the problem that I first would want to say that I fully agree with everything the chairman has said about the two bills before the committee. I am confident that the committee will take the best features of both and incorporate them into its own. I would hope, and this is the main thrust of my argument this morning, Mr. Chairman, that in doing so, they would also give consideration to, and extract from, my bill, S. 3399 dealing specifically with the matter of the sonic boom. My bill, I believe, is even better than the provisions of H.R. 3400 and S. 707 insofar as the sonic boom problem is concerned.

I made a statement on the floor of the Senate recently which I would ask the indulgence of the committee to incorporate into the record of the hearings at the appropriate point, together with a little further statement dealing directly with this matter.

Senator MONRONEY. That will be so ordered and will be included following your testimony this morning.

Senator CASE. Thank you very much, Mr. Chairman.

Beyond that, I want to say this is a problem already upon us, but looming potentially into a tremendous problem, when the commercial supersonic plane moves into action. I know that all of our agencies, Government agencies as well as the Members of the Congress, particularly this committee, will want to deal with it in a proper way. The only question is how we best can provide machinery and framework for their action.

Thank you very much, Mr. Chairman.

Senator MONRONEY. Thank you, Senator Case.

I might say that the Chairman has unfortunately had a great deal of experience in sonic booms because my home city was chosen—I do not know why the honor was conferred upon us—for the 6-month testing period of sonic booms under allegedly controlled conditions which sometimes became uncontrolled. I am aware of the fact that sonic booms can be irritating to a high degree, but also damaging to property.

This matter was in high debate until about a week ago by the dear Air Force saying that aircraft noise could not possibly damage property on the ground. But when a large number of windows were broken

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out of the Air Force Academy by an Air Force plane, I think maybe they have recognized that the disclaimer which they so enthusiastically made about damages on the ground from overflying aircraft was no longer a myth. And it does become a problem with which we must grapple.

I am aware of the great danger of uncontrolled sonic booms, but I believe, like most other problems of the air, that this will be one which will be able to be controlled if we act now to prevent patterns and altitudes of flight and degrees of overpressurization in the sonic booms causing these concussions on the ground which can be damaging, certainly, to glass and perhaps other structures.

It seems to me that it is time we think of this, because we will soon have the Concorde, the product of France and England, flying. They will have to adapt the flight of the plane to ground environment, as all planes have had to adapt to, since the Wright brothers first flew. Perhaps by careful regulation and measurement of sound noises, we will know more about it before the problem arises with the Concorde.

I can only say that in one way the matter will probably be self-enforcing so far as the airlines are concerned because if by any unfortunate chance an incoming supersonic plane would miss its bearing or noticeably overfly a marker and go down Park Avenue in New York City at lower altitude, with the glass canyons that exist, I think Pan American would have to turn the airline over to the property owners for liquidation of the damages resulting. For that reason, I think it is high time that we do take cognizance of this as a major problem. We will develop a good supersonic plane, and we must find the types of environment in which we can fly and still be compatible with life on the ground.

I compliment the distinguished Senator from New Jersey for his diligence and preparation in bringing this out now before these patterns are established. If established, they would be hard to break.

Senator CASE. I thank the chairman very much. I am happy that the matter is in the hands of this subcommittee because I know how sensitive you are to the problems of the people in relation to any new instrument such as this.

In connection with what the chairman has said, I wonder if I might be indulged to make this point about my particular bill: He mentioned the slowness of the Air Force to recognize that supersonic planes might be a problem to people on the ground and ground installation. This is a perfectly natural thing. The Air Force's job is to quickly move people around. The point of my bill is that in recognizing this tendency on the part of executive agencies whose job is to develop aviation, I would request that in the case of the supersonic airplane, they not be permitted to fly overland for 2 years and thereafter until Congress says so. It would not be left to the FAA to decide because the FAA, it seems to me, would be put in an untenable position in that it is the developer, the sponsor, the natural protagonist, of the supersonic plane. For that reason, I would request that there be no overland flights until Congress so decided.

And those are, I think, perhaps two crucial, and most important, differences between the other bills and the one that I have introduced. And I thank the chairman.

Senator MONRONEY. Would the Senator yield, however, for a possible area of exploration which I think will be necessary if we are to move forward with what I think would be a very important area of transportation? I do not know much about the Concorde, but I do know about the supersonic the United States is developing. This plane is capable of both supersonic and subsonic flight.

I visualize the time when this plane, coming in from Europe at its 70,000-foot altitude and its speed of mach 2.1 or 2.5 would lower to its subsonic speed as it approaches over the water. In doing that, the sweep back wing comes back to more or less conventional configuration thus giving the plane less noise, I am told, than a conventional 707 or the DC–8.

I would suggest that the committee look carefully into this problem. Certainly supersonic flight over mainland America or over any other populated area, including the interior of Africa, would subject the airline to a harassment of damage suits so great that it would be better to relieve them by prohibiting supersonic flights. But the supersonic plane can fly economically—at least, the American one can—at subsonic flights. The flight could proceed subsonically until 20 or 30 miles at sea and fly as economically and as quietly as our present day jets. In that way, we would, I believe, be able to have the best of both worlds.

In other words, if you want to terminate the flight in Chicago, which is entirely possible, or at St. Louis or Atlanta, you would travel supersonicly over the ocean and would become an ordinary conventional jet airplane, with no more noise or perhaps less noise than the present day jets would generate as landing is approached.

It is in the breaking of the sound barrier that the noise occurs. A lot of people think the damage is a result of a single boom occurring as you break the sound barrier. The record should show it is a continued pattern of boom on a cone about 35 miles wide. No one knows how it could be silenced or controlled. But we can control the speed of flight as we do in many, many traffic corridors and in that way, I think, bring about a testing and a utilization of this place in multiple terminals and still not limit them to the horrendous experience of trying to get into John F. Kennedy Airport. When you are holding a $45-million plane in the air for 2 hours for a landing or on the taxiway waiting for takeoff, you are not only burning up a lot of fuel, but also a heavy investment in a tremendously expensive plane.

Senator CASE. I think undoubtedly this is something the committee would wish to consider. I think the question, as the chairman has pointed out, is whether, in fact, it could be operated economically on that basis or whether, having permitted these planes to operate tentatively on the basis that the chairman suggests, it will be found they are not so economical. The pressure to fully operate them over land as well will be very strong. I think all these matters are matters which the chairman of the committee is aware, and I am quite content to leave it in the hands of a group so concerned with every aspect of the problem.

Senator MONRONEY. Thank you very much for your help and testimony.

(The material supplied by Senator Case follows:)

I commend the Subcommittee for tackling the urgent and growing problem of aircraft noise. The residents of my state of New Jersey, particularly those living near Newark Airport and under increasingly crowded airways, are only too well aware of how their eardrums are assaulted night and day by the noise of incoming and outgoing airplanes of every size.

I believe that H.R. 3400, the aircraft and sonic boom abatement bill passed by the House last week, is a step in the direction of effectively curbing aircraft noise and sonic boom. Yet I suggest that H.R. 3400 does not go far enough in dealing with sonic boom, a major concern of mine.

My own bill, S. 3399, would deal firmly and effectively with the problem of sonic booms created by supersonic transports traveling faster than the speed of sound. I hope the Subcommittee will see fit to incorporate its provisions in any bill on aircraft noise and sonic boom control it may recommend to the full Commerce Committee.

My bill (1) bans all non-military flights at supersonic speeds over the United States and its territories and possessions for an indefinite period; (2) provides for a comprehensive, two-year investigation of the sonic boom and its effects by the Federal Aviation Administration in consultation with seven other departments and agencies, and (3) leaves it up to Congress to determine whether to continue the prohibition against supersonic overflights.

In three years or less, the Anglo-French SST, the Concorde, may be ready for commercial service, and four or five years beyond that the U.S. SST may begin rolling off production lines. Traveling at speeds up to 1800 miles an hour, these aircraft will generate sonic booms that will follow continuously in their wakes. All those within the "boom zone," perhaps a 50-80-mile-wide area, will hear the sonic blasts. These explosions will be at least as noisy as a thunderclap and certainly more destructive.

We know from the Oklahoma City tests in 1964 that about 27 per cent of that city's population said they could not learn to live with eight booms a day, even though the times of the boom were known in advance, and there was assurance that utimately the testing would end.

As I stated, the boom will be destructive. A recent sonic boom incident at the Air Force Academy in Colorado resulted in the shattering of about 300 windows, and injury to 15 persons. In addition to glass, sonic booms can crack plaster, shake bric-a-brac from walls, damage geological formations, interrupt conversation and almost assuredly disrupt sleep. I could go on and on.

While research into lessening the boom is under way, the National Academy of Sciences warns us not to expect any "dramatic" reductions in sonic boom intensities in the foreseeable future. And the Air Force tells me that at present "there is no known method of dissipating the pressure wave" produced by planes flying faster than the speed of sound.

Clearly it will be difficult, if not impossible, to lessen the boom, a natural phenomenon. And clearly much more needs to be known about the effects of sonic boom before anyone, even the Federal Aviation Administration, which is given regulatory authority under H.R. 3400, can, with intelligence, devise acceptable sonic boom measurements, if, indeed, this is possible at all.

Moreover, it strains credulity to believe that the FAA will be able to regulate with any sense of detachment sonic booms from an airplane it is developing.

For the FAA is more than a regulatory agency in the SST field. It is the chief developer of the plane in the United States. It has authority under law to construct the craft. It executed the necessary development contracts with private manufacturers, and must see to it that they are carried out. Also it must ask Congress each year for approriations to conduct the development program, since, until reimbursement is received, it is being financed on a 90–10 basis by the Federal Government.

The FAA also has proved itself to be an ardent advocate of the project, frequently citing material gains to be derived from the supersonic transport. One wishes it was equally ardent about protecting the public from the sonic boom that the SST, beginning with the Concorde, will generate.

While it seems to have sufficient authority to ban boom-creating flights over land areas, the FAA has not done so. May it not be that its refusal to act is because it suspects that overland flights will be necessary to assure the economic feasibility of the project, and that ultimately the pressure to permit them will become overpowering?

In the circumstances, Congress must take a hand to see that the public interest is protected, and that protection is accorded before, not after, the SSTs begin filling our skies with sonic booms.

My bill, I believe, provides a mechanism to assure this. It removes the vital decision on supersonic overflights from the hands of an agency with at least a potential conflict of interest, and puts it where it properly belongs—in the hands of Congress.

Under my bill, SST overflights, including those of the Concorde, will be prohibited until Congress has had an opportunity to evaluate the effects of the sonic boom, and determine whether the American people should be subjected to it perhaps a number of times each day, every day of their lives.

STATEMENT BY SENATOR CLIFFORD P. CASE

Advocates of the supersonic transport (SST) hope these planes will be in commercial service in three years or less.

Yet while these aircraft, flying faster than the speed of sound, will provide incredibly rapid travel, they also will drag sonic booms continuously in their wakes. The boom apparently will be at least as noisy and certainly more destructive than a thunderclap.

In one recent incident, an F–105 Thunderchief jet is reported to have broken the sound barrier over the Air Force Academy in Colorado. According to newspaper stories, the resultant boom shattered 300 windows and injured 15 persons with flying glass.

Initial tests indicate that sonic booms also can crack plaster, loosen nails, shake bric-a-brac from walls and damage geological formations. In addition they may hold danger for weak buildings and mountains laden with snow and ice.

Of course, the boom (which proponents of the SST describe as a "20th Century Sound") will be an affront to the eardrums. In tests made in Oklahoma City in 1964, 27 percent of the residents of that community said they could not tolerate eight booms a day, even though the times of the tests were known in advance and there always was the assurance that ultimately the experimentation would end. According to a government report, acceptance of the boom in Oklahoma City fell from 90 percent during the early weeks of the program to around 75 percent in the final weeks, seemingly bearing out the National Academy of Sciences view "that public annoyance (with the boom) tends to cumulate over time, even among those people whose basic attitudes toward the SST are favorable."

In the Oklahoma City program, no tests were made at night, leaving unanswered the important question as to how sonic booms affect sleeping people. Also, it is uncertain how the boom will affect persons with physical ailments such as heart disease and surgeons in the midst of delicate operations. This is certainly not the extent of the questions to be answered.

Despite this almost total lack of information, the 1200 mile-an-hour Anglo-French SST, the Concorde, may be ready for commercial service by 1971. Although there have been delays in development, the 1800 mile-an-hour American SST may be in commercial use by 1974 or 1975. Seventy-four Concordes already are on order and it is estimated that the American SST fleet will number from 200 to 1200 planes.

But the crucial question as to whether overland flights at supersonic speeds will be banned remains unanswered. While the Federal Aviation Administration, chief developer of the U.S. SST, apparently has authority to impose such a ban, it has not done so. Indeed, its position on the subject has been ambivalent.

For example, in a letter to me last October 6, Maj. Gen. J. C. Maxwell, head of the SST project for FAA, stated:

"We realize that the sonic boom may prohibit overland operations of the SST unless the boom is held within acceptable limits, Government agencies and the SST manufacturers have and are conducting extensive research to lessen the effects of the sonic boom and to determine sonic boom acceptability. Until such tests are completed and criteria are established, we cannot say whether the SST—or any civil supersonic transport—will be permitted to operate supersonically over populated land areas."

And in a letter to me dated October 27, 1967, General Maxwell's office said:

"Although we have conducted many tests on the effects of sonic boom, as of now we do not know if supersonic commercial flights will be permissible over populated areas. It is for this reason that the decisions on the SST program have been based on the assumption that the SST will be restricted to flight routes over the oceans and other unpopulated areas."

However, General Maxwell also has been quoted as saying that "the public will have to learn to accept sonic boom to a degree." These statements are hardly reassuring to millions of Americans who will have to live with the sonic booms if the FAA decides, for example, that permitting overland flights at supersonic speeds is vital to the economic feasibility of the project. Many, I'm sure, wonder whether the FAA would consign us to a Dr. Strangelove world in which we all would have to "learn to love the boom."

Restricting supersonic flights to "unpopulated areas" or over "the oceans" would not be satisfactory. The National Park Service has cited a number of instances in which sonic booms were suspected of having caused damage to archeological artifacts or geological formations. For example, the Park Service believes that a sonic boom caused much of an overhanging cliff to fall and demolish a prehistoric cliff dwelling in Canyon del Muerto, in the Canyon de Chelly National Monument, Arizona, in August, 1966. In another instance in 1966, according to the Park Service, approximately 10 to 15 tons of dirt and rock were found to have fallen from one of the formations near the bottom of the Navajo Loop Trail in Bryce Canyon National Park, Utah. In this case, "three exceptionally sharp" sonic booms are suspected, the Park Service stated.

Last Autumn, the Wilderness Society, concerned that sonic booms would shatter the "silence and peace" of wilderness areas, urged that commercial and private aircraft creating such blasts be prohibited over all land areas. Some critics of the SST program have raised a question why even overwater flights of supersonically operated SSTs should be permitted. This is a further area where the effects of the boom have been wholly unexplored.

While the FAA ties its decision on over land supersonic flights to the outcome of further research into lessening the boom, a recent National Academy of Sciences report concludes that no "dramatic" reductions in sonic boom intensities are on the technological horizon, and that much more research remains to be done. In a letter to me last August 18, the U.S. Air Force stated categorically:

"At the present time, there is no known method of dissipating the pressure wave that is produced when an aircraft exceeds the speed of sound."

Yet in three years or less the commercial supersonic age may come crashing into our lives with no protection for the public.

The question of protecting the public, and how best to do it, must be decided before, not after, the SSTs begin adding to an already noisy environment. As Interior Secretary Udall stated in January, 1967:

"I think that we are going to make a serious mistake if we don't appraise this (the sonic boom) in advance. I would hate to see us do what we have with so many other decisions that have been made, to go booming ahead . . . and then find out later that we have caused a serious deterioration in the overall-environment."

Sweden, Switzerland and West Germany have taken, or are in the process of taking, steps to curb supersonic flights over their countries. In my judgment the U.S. should show no less foresight and should move promptly and effectively to deal with this problem in advance of its occurrence.

In order to bring about such a result, I have introduced legislation (S. 3399) which (1) bans all non-military flights at supersonic speeds over the U.S. and its territories and possessions indefinitely; (2) provides for a comprehensive, two-year investigation of the sonic boom and its effects by the FAA in consultation with seven other departments and agencies; and (3) leaves it up to Congress to determine whether to continue the prohibition against supersonic overflights.

The issue of supersonic overflights is too important to be left to a single appointed federal official, or a single federal agency. In a matter affecting most, if not all, of the nation, Congress—and Congress alone—must make the final decision. Congress has a duty to see to it that scientific advances, no matter how desirable or spectacular, do not create more problems than they solve.

At this stage at least, I believe that only those directly concerned with development of the American SST and perhaps the relatively small percentage who will use it would consider the supersonic transport an unqualified good. Even in the Administration there is no unanimity of support for the project. Secretary

Udall, for example, has established a special committee of distinguished scientists to advise him on the effects of the intrusion on the environment of the sonic boom.

And in a little-noticed report issued last December by an Independent Study Board established by the Commerce Department, the following appeared:

" . . . the supersonic transport plan, unless the sonic boom problem can be solved, will potentially provide benefits to a small percentage of the total population and earn profits for some firms, but at the expense of transferring to the general public heavy costs of further deterioration in environmental quality."

The report went on to say that "regional and national objectives can best be served if a major effort is made to shift the emphasis in science and technology programs away from mere technical feasibility toward social priorities."

Amen. We want technological and physical progress, but we want it on acceptable terms. This point cannot be stressed too greatly. Faster airplanes, large airports, more freeways and new high-rise buildings, among other things, are desirable or not depending upon their consistency with sound planning and environmental goals that are in the public's interest.

I hope the Senate Aviation Subcommittee, which has jurisdiction in the field of aircraft noise, including sonic boom, will schedule hearings on my bill before the end of this congressional session. With the commercial supersonic age and its "20th Century Sound" almost upon us, it is not only timely to do so, it is urgent.

Mr. President, the response to my bill has been wide and overwhelmingly favorable. Among the many letters I have received is one from Dr. DeWitt Stetten, Jr., Dean of the Rutgers Medical School at New Brunswick, N.J. I ask unanimous consent that it be printed in the Record after my remarks.

The text of the letter follows:

RUTGERS, THE STATE UNIVERSITY,
RUTGERS MEDICAL SCHOOL,
New Brunswick, N.J. May 13, 1968.

Hon. CLIFFORD P. CASE,
U.S. Senate, Washington, D.C.

DEAR SENATOR: As a dues paying member of the Citizens League Against the Sonic Boom, and as the Dean of Rutgers Medical School, I am particularly proud and pleased that it should have been a Senator from New Jersey who introduced Bill S. 3399, "Regulation of Sonic Booms".

The devastating effect of sonic booms was first brought to my attention when I visited Oklahoma City some years ago during a period when the effects of repeated sonic boom were being tested on that population. Every morning and every evening a military supersonic plane flew over the city, shattering windows, morale, sleep, and conversation. After one month of this exposure it is my understanding that the population was found not to have accommodated to this additional stress.

A couple of years ago, at a meeting of the National Research Council, I listened to a report from the chairman of its Committee on Pollution, Dr. Athelstan Spilhaus, then of the engineering faculty of the University of Minnesota. This committee concerned itself chiefly with the reduction of pollution by chemical and radioactive agents which were already in our atmosphere, our soil and our water supply. I raised the question from the floor at that time as to whether sonic booms could not be construed as a pollutant of our environment and one against which there was yet time to legislate. I was assured from the podium that commercial supersonic aviation was definitely on its way and there was nothing that this august body could do about it.

I am very happy to learn from your recent actions that there is something to be done to spare us this additional trauma in what are already trauma-filled times. I agree absolutely with the press release from your office dated Sunday, April 28, 1968, and hope that you will be successful in converting S. 3399 into the law of the land.

Very truly yours,

DEWITT STETTEN, Jr., M.D., Ph. D.,
Dean.

Senator MONRONEY. The next witness is the Honorable Seymour Halpern, U.S. Representative from the State of New York.

We will welcome a statement from him now, or if he cares to come this afternoon, we will be glad to hear from him at that time.

We are honored to have the first Secretary of the Department of Transportation, a great institution. This man has testified before this committee often as Chairman of the Civil Aeronautics Board and has jurisdiction over all transportation.

You may proceed, Mr. Secretary.

STATEMENT OF HON. ALAN S. BOYD, SECRETARY, DEPARTMENT OF TRANSPORTATION; ACCOMPANIED BY MATTHEW S. PERLMAN, ASSISTANT GENERAL COUNSEL FOR OPERATIONS AND LEGAL COUNSEL, AND CHARLES R. FOSTER, OFFICE OF NOISE ABATEMENT

Secretary BOYD. Thank you, Mr. Chairman.

Mr. Chairman, members of the subcommittee, I am accompanied today by Mr. Matthew Perlman, Assistant General Counsel, and by Mr. Charles Foster, Director of the Office of Noise Abatement of the Department of Transportation.

It is a pleasure to appear before your subcommittee to present the views of the Department of Transportation on the very important subject of control of aircraft noise. The legislation enacted by the House of Representatives would mean that the Federal Government would require compliance with noise reduction standards as well as safety standards as a condition to the issuance of future aircraft type certificates.

A description of the aircraft noise abatement function that the Department of Transportation is now performing begins with some recent and relevant history which I would like to review with you. The President, in his message to Congress proposing the establishment of the Department of Transportation, recognized that "aircraft noise is a growing source of annoyance and concern to the thousands of citizens who live near many of our large airports." Further, he directed us to "embark now on a concerted effort to alleviate the problems of aircraft noise."

The President's Science Adviser, Dr. Hornig, with assistance from Federal and local government representatives, as well as representatives from industry, studied the development of noise standards and the compatible uses of land near airports and the need for legislative and administrative actions to move ahead in this area. The bill under consideration represents the outgrowth of one of the recommendations which Dr. Hornig's group made.

As of September 1, 1967, the responsibilities previously held by Dr. Hornig and his advisers and colleagues were transferred to the Department of Transportation and are carried out within the Office of the Secretary. We are now the focal point for Government-wide activity in the field of aircraft noise abatement. Later in my testimony, I will comment on how we have organized the implementation of these new responsibilities within the Department.

Our effort to find solutions to the problems associated with aircraft noise is part of a total departmental effort to insure that transportation activities do not adversely affect our natural environment.

Sections 2(b) (2) and 4(f) of the Department of Transportation

Act place upon the Secretary of Transportation, a major responsibility to insure that we preserve, to the maximum extent possible, the values of our society and the rich natural assets which we enjoy.

For those who must live surrounded by the din of normal city life, the whine of an increasing number of jet aircraft can make life almost intolerable for many who live below or near the path of flight. I am not here to tell you that there are easy solutions for the problem. But I am here to tell you that the Department of Transportation considers the problems of aircraft noise second only to safety.

Let me begin by saying that I do not believe there will ever be such a thing as a completely quiet airplane. Despite our far longer experience with the problems of truck noise and railroad noise, quit vehicles in those modes of transportation have not been produced. I am convinced that we will be able, by technological and regulatory means, to reduce the impact of aircraft noise exposure for the majority of Americans who are now, or will potentially be, subject to excessive aircraft noise exposure.

Our approach to the problem looks at the total aircraft noise problem from engine start to shutdown. We include both subsonic and supersonic aircraft and consider the sonic boom as well as noise generated by aircraft.

We have established study panels in eight major areas in which investigations are being conducted to identify the noise reduction potential within each of these areas. They are: aircraft noise research, aircraft operations, sonic boom research, airport and land use, natural environment, legal, structures, and human response. The Departments of HUD, Interior, Defense, Transportation and NASA are providing chairmen for the panels and support for studies in these areas. Representatives from outside the Government have been and will continue to be solicited for their advice and recommendations on this program.

Although we have made improvements in some of these areas and research has been underway for some time, we must push far more vigorously for action programs to provide more positive results. We have a substantial base today upon which to initiate action and are taking and will increasingly take action to alleviate noise.

What we propose to do, in essence, if the pending legislation is backed, is to specify maximum allowable noise levels under certain defined conditions to be met by a manufacturer prior to an aircraft's certification by the Federal Aviation Administration. We believe that the aircraft industry, by and large, will benefit by the establishment of noise standards since all engine and aircraft builders will thereby be required to meet the same ground rules with respect to the noise output of their respective products. As to what will be the maximum allowable noise levels to be used for aircraft certification, we recognize that there will be study and consultation required prior to any final decision.

But let me make it very clear that the present technology which we have to produce a quieter engine, and that which we believe will be available within the short-range future, will not solve the aircraft noise problem. We believe that a noise reduction of between 10 to 20 in the effective preceived noise level at the source will eventually be attained.

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Recent tests have revealed that a reduction of 10 EPNdB provides far greater relief from noise than the number might indicate. These tests reveal that such a reduction produces 50 percent less annoyance. I think it is clear from these tests that the payoff from modest engine noise reduction is significant.

In conjunction with our concept of aircraft noise certification we also intend to continue our efforts to insure that Federal funds will not be expended for airports which have not provided for adjacent land utilization compatible with future noise exposure. This approach perhaps offers more hope for noise abatement for future airports than any other, but at the moment we still face the major problem of proliferated and unresponsive zoning authority in the areas surrounding the airport.

In the field of compatible land use, the Department is developing a computerized method of predicting aircraft noise exposure at airports. The methodology has been applied to three major airports, JFK, O'Hare, and Los Angeles International, and our planning envisions the application of this technique to assist in the land use planning at other airports throughout the country.

The absence of specific aircraft noise standards has retarded attempts by local authorities to evolve compatible land use plans in the vicinity of our airport since land use planners have not had a bench mark of noise that would allow them to perform realistic land use planning. The land use planners have been hesitant, and in many cases rightly so, to embark on complex and comprehensive plans if the likelihood exists that the noise environment will continue to increase by an order of magnitude with the introduction of noisier aircraft every few years. The passage of this legislation will be the foundation for reversing this trend.

We note that the bill passed by the House vests the authority to prescribe noise standards and to take appropriate certificate action with the Federal Aviation Administrator. In keeping with basic principles of Government organization and management, we believe that it would be more appropriate for that authority to be vested in the Secretary of Transportation.

In summary, we believe that aircraft noise levels have become a serious encroachment on the quality of the environment for large segments of the public. The accelerated growth of air transportation combined with the development of larger and more powerful aircraft, the enlargement of many airport facilities, and the engulfing of lands immediately surrounding our airports by urban communities all contribute to a growth of the noise problem on a national scale. All branches of the Federal Government, as well as local officials, must act in a positive manner to check the growth of this problem if we are to see aviation continue to serve our country's needs.

Let me conclude with a plea that you give speedy and favorable consideration to the legislation which would mean an effective beginning to the effort to reduce aircraft noise. As I have previously stated, it will not solve all the problems that face us in aircraft noise abatement, but it will be an essential instrument in finding solutions.

Thank you, Mr. Chairman. That completes my testimony.

Senator MONRONEY. Thank you, Mr. Secretary, for a very comprehensive and fact-presenting summary of the problem that we face here.

In considering noise abatement, I would list, and I think the members of this committee would agree, safety as No. 1 and noise as No. 2. Any regulations that you feel would be promoted would have to take that order of sequence would they not?

Secretary BOYD. No question about it.

Senator MONRONEY. I hear reports and read reports that some of the antinoise procedures are being tried in the hot areas where violent protests are made by people who have bought houses or built houses surrounding airports that the chopping off of power shortly after takeoff is not the best safety measure and procedure. While we are all seeking noise abatement, it must come second to safety. Is that not a correct statement?

Secretary BOYD. That is absolutely correct. And I would like to point out for the committee that the noise-abatement procedures which, as you say, have been criticized in some areas are based on rather extensive objective testing and evaluation by the Federal Aviation Administration and by NASA before they are put into effect. And I find it very difficult to be charitable about some of the criticisms which relate allegedly to safety in these areas because there is absolutely no basis for that fact. The FAA and the Department have without exception given safety the first priority in every action they have taken and will continue to do so.

Senator MONRONEY. In other words, we have no special quiet zones of airports which would make this a variable rule—the reduction of power on takeoff or landing procedures that might endanger the speed or the controlability of a 747 or a DC–10.

Secretary BOYD. That is absolutely correct, Mr. Chairman. And all of the noise abatement procedures which are required are based on very careful evaluation and are completely within the operating characteristics of the particular aircraft involved.

Senator MONRONEY. In effectuating these procedures, you would have an opportunity to hear from the pilots of the planes themselves who routinely must takeoff and land in these particular areas.

Secretary BOYD. Yes, sir; that is correct. There is an opportunity for full comment before the procedures are put into effect. And there is a continuing review of the procedures by the FAA. And certainly the FAA wants to be advised immediately if there are any safety problems involved and will check it out.

Senator MONRONEY. This will involve a bill on which this committee will begin hearings tomorrow—the airways/airport or airport/airways bill. If it were possible to develop a new type of program which would improve the electronics surrounding airports and perhaps prepare for double tracking of the principal runways of some of our more major and noisy airports, we would be able to eliminate the sound period in which even present noise is heard by speeding up the approaches, thus lessening the holding time above the airports and providing for more immediate landings and takeoffs. Would that be a fact?

Secretary BOYD. Yes, sir; that is quite true. Actually, as you point out, there is no such thing as an answer to aircraft noise. There are many approaches to solutions. And we are working as hard as we know how in parallel lines on all of the approaches, each of which should have some incremental beneficial effect on noise.

Senator MONRONEY. Has anyone made a real study as to the possible value of trees as shielding for jet noise around airports? I know that when the very distinguished former administrator of FAA, Mr. Quesada, was planning the wonderful airport which is so little used by our airline industry at Dulles, he planted a good many trees around this fine airport, hoping that in a way it would help be a buffer zone around this area. I notice a distinct lack of trees around LaGuardia, John F. Kennedy, O'Hare, and other places. Is there anything in the natural insulation that could derive from quick growing trees——

Secretary BOYD. Yes, sir.

Senator MONRONEY. (Continuing.) That would help soften the noise level, particularly on the ground and may be even in the immediate point of takeoff or landing?

Secretary BOYD. Yes, the trees do provide a sort of acoustical shield for surface noise. I might say, Mr. Chairman, that there were a million trees planted at Dulles. And in view of the fact that the airlines do not seem to use it, we feel we can carry the operating costs in a few years by timber. [Laughter.]

Senator MONRONEY. Very good.

Now that we are piercing the speed of sound and operating 500-passenger or cargo planes that can take almost a half a trainload of cargo, maybe, just maybe, it might be possible for some inventive genius to operate an STOL that would connect these three great airports and put them into operation.

Secretary BOYD. Well, I read somewhere the other day that that is a luxury service, Mr. Chairman, and I think as long as it is characterized in that fashion, it is going to be very difficult.

Senator MONRONEY. We are paying for luxury service now, and we are not getting it, in paying $25 for a cab to come in from Dulles or in paying about $3.50 or $4 to come from a $150 million airport to the heart of the ghetto. Then finally to get a cab to get to your home.

Secretary BOYD. I have every hope that there will be an STOL service established through the private sector in the immediate future.

Senator MONRONEY. I have heard rumors to that effect. And may the god of aviation, whomever he may be, hasten that day, because I hate to think that we can pierce the speed of sound and still not solve this. This comes into the matter of airports, I think.

If you are going to talk about airport noise, I think you are going to have to talk about distance. Distance is not going to be conquered in today's 4:30-to-6 commuting traffic and help you get to either Friendship or Dulles.

At 8 o'clock yesterday morning, I missed my plane by 2 minutes because the good church people in Maryland were going to church at that hour. It took only 2 hours to get from Friendship to Dulles for the next plane, but I did find one that I could get on and get out in an hour.

But this is a growing problem, and I compliment you, and I know the work you are doing on it. But I do think greater land separation from the towns is going to be necessary and, therefore, the problem is going to exist until the rigid rotor or STOL comes. Once tried, it will become a very important factor even if it must be a wee bit subsidized by some of the airlines in order to take care of the shortfall that might occur in the formation period of this new intermediate transportation.

Secretary BOYD. Yes, sir; I quite agree. I understand Mr. Tipton is going to testify. I expect he can give you the level of enthusiasm of the airlines for subsidizing this service.

Senator MONRONEY. You mentioned zoning, which I think is a very important thing. The beautiful land that is located, bought, and developed at the cost of many millions of dollars a long way out and with good highways connecting suddenly begins to fill up with suburbia. Is there a possibility of a standard type—at least the suggestion—of zoning so that you could say this area with, then, x miles of perimiter would have a new airport being built at a cost of $100 million or so? Will these zone against residential construction?

Secretary BOYD. That is a matter for local jurisdiction, Mr. Chairman. And the Federal Government has taken several approaches in this area, one of which I think I mentioned in my testimony. And that is to be able to establish some standards of noise measurement so that the local zoning people can, in effect, put an overlay on a site and know exactly what the noise penetration will be if an airport is located in any particular area.

Another thing is that insofar as airport funds are concerned, we are attempting to require as a condition to airport grants that there be compatible land use zoning in the airport where Federal grants are provided.

A third, and I think rather effective approach, is taken by the Department of Housing and Urban Development where as a matter of policy HUD will not guarantee mortgages for various types of residential development within this noise area which we have concluded makes residential use incompatible with the development of the airport.

Senator PEARSON. Mr. Secretary, I make reference to your statement in which you said, "We intend to continue our efforts to insure that Federal funds will not be expanded for airports which have not provided for adjacent land utilization compatible with future noise exposure." We are really going to get a quieter engine, but we are not going to get a quiet engine in the near future.

Secretary BOYD. That is correct.

Senator PEARSON. To the extent that we can solve this problem, the real giant steps are going to be made in utilization of land use and installation and actually things that have only a remote relationship to the level of sound. Is that not right, for the next few years, at least?

Secretary BOYD. I think the major impact will be in those areas. One that will relate to the aircraft itself is some work that NASA is doing now on—what is it called, Chuck—variable liftability?

Mr. FOSTER. Direct lift control.

Secretary BOYD (continuing). Direct lift control which, if it becomes feasible on a commercial basis, will permit the plane to get much closer to the airport at a higher altitude before it comes down. But the answer, just as you said, is going to be compatible land use to a very large extent.

Senator PEARSON. And, if the chairman will further yield in relation to who will promulgate these regulations, is it correct that normally in your talking to HUD or to the other agencies of the Govern-

ment, that that be done at the Secretary's level rather than an agency head level?

Secretary BOYD. Yes, sir.

Senator MONRONEY. Would it be feasible, if the gods are kind and we get an airport bill this year instead of next year, to require as a condition precedent to the Federal grant of the 50–50 matching for land that the community will have to conform the zoning to make the land use compatible with the existence of the airport? In other words, we are the prior tenant to that case, and it seems to me it is always better to meet the problem before you put down the concrete and get the planes out rather than after.

Secretary BOYD. I think it might be possible, Mr. Chairman, to do that. It does raise a question about the relationship between the Federal Government and the local government, a rather major policy issue.

I would ask your indulgence to submit a response to the record on that.

Senator MONRONEY. That would be fine.

The point I am making is that today's use of an adjacent airport is great because it is quick and easy. There are a lot of people who work at the airport, and want housing there, to whom the noise level is not objectionable. But there are others working in these airports and in the airfield industry who, when the runway is extended over their own house, become quite vocal against the noise encroachment. For that reason, we ought to have them knowingly accept and waive any financial liability, although they could still squawk and write their Congressman if they want to. Still it would be a nonliable action against the State or against the Federal Government or whoever the local sponsoring body was.

Secretary BOYD. I have the impression, Mr. Chairman, there are a lot of men who work at airports who do not complain, but whose wives do.

Senator MONRONEY. You might get community property by that means.

But it seems to me that with the growth of the C–5A and its likelihood of a vast amount of services, it is going to make an airport an ideal light industrial center. Because of the increasing amount of commerce that will move by air, an opportunity will arise for a more profitable development and a well-planned industry park surrounding an airport, a park where noise is not a factor, where land is relatively cheap, and where highways are adjacent. This will enable us to work out a better land use rather than a worse land use than if it is used only for subdivision development.

Secretary BOYD. I think, Mr. Chairman, a fact which is becoming increasingly clear is that a modern airport today is the nucleus of a modern city, and it should be zoned, conceived and developed with that in mind. And there is no question you can build a major airport anywhere in the country today and you are, in effect, starting a new city. And we have zoning in most of our cities, and it is based on relationships between residential, commercial, and industrial property. And there is no reason it cannot be done starting with the airport as the core and developing compatible land use on that basis with the realization that you are building a new city.

Senator MONRONEY. It seems to me that there are commercial opportunities as well for shopping centers. They are noisy and not wanted in many residential districts.

Secretary BOYD. I think so.

Senator PEARSON. The Secretary and I were visiting before the hearings, and I wish to make this comment for the record: Sometime ago, we toured about eight or nine of the HUD airports. One of the questions we had, in bull sessions with the city fathers, the airport managers and the airlines and general aviation people, was the problem of sound. I was struck by the fact that although every airport had a sound problem, the results of that problem were different from city to city. In Los Angeles, they had literally hundreds of lawsuits filed. In New Orleans, they had almost no litigation. St. Louis was somewhat the same way. But you found there was a noise problem everywhere you went. You found different public reaction to it.

I support this goes back to that intangible human element to which you referred a few minutes ago. I do not know what we can do to promote the good work that some municipalities are doing.

New Orleans, for instance, had a committee. When they had a complaint, the committee sought to explain it. They have had remarkable results, frankly, in my experience with complaints. This is another dimension of what we are talking about.

I do not think you can write it into this bill. I do not really think the Secretary or Congress can do anything about it. Perhaps your man here today, the gentleman that is in charge of your noise abatement problem, might comment on how successful this type of relationship has been in pleasing people around airports.

Mr. FOSTER. It varies at different airports, of course. Most of your major areas do have something similar to that you mentioned in New Orleans. San Francisco, New York, Boston, Los Angeles, all have some sort of sound abatement council or noise abatement council. One of the things that we are going to do through the office is to insure that what is successful in one community is made available to other communities so we do not have a solution in San Francisco, for example, that the people in Boston are unaware of and are trying to solve the same kind of problem.

Senator PEARSON. I understand that in Los Angeles, they have a bond issue for the purposes of condemning literally hundreds of homes.

Mr. FOSTER. They have a bond issue and have actually bought land and have done redevelopment of their own around the airport.

Senator PEARSON. Enormous tracts.

Senator MONRONEY. I understand practically every one of those homes was built after the Los Angeles International and after their runway laid out. But the real estate agents did not so advise the buyers.

Secretary BOYD. Well, Los Angeles has a problem which is not at all unique. And that is that the airport is surrounded by other municipalities. And the whole question of political subdivisions and their relations to major modern airports is one of nothing but problems. The airport in Oakland, Calif., is faced with an identical situation where the nearby community of Alameda has authorized the con-

struction of high-rise apartments which are directly on the flight path from the major runway. And this is entirely right and proper so far as Alameda is concerned. They feel that they should have the right to develop their own community, and that is what they are doing. And the fact that the Oakland Airport happens to have a flight path that flies over them is just too bad as far as they are concerned. And this happens all over.

Senator MONRONEY. Is there any way you can have a regional airport authority that would encompass these municipalities with their varying zoning laws and what not? They all profit indirectly from the commerce the ariport induces.

Secretary BOYD. Yes, it is possible. In fact, another thing which HUD is doing which was not developed with this in mind particularly is establishing councils of government in an effort to try to get a cohesive approach to regional problems. This can be done on a permissive basis.

Of course, one of the things which I think also relates to human nature is that most of us would like to have the best of all worlds. It is nice to have the airport available to use, but we go ahead and develop our own community any way we want.

Senator PEARSON. Mr. Secretary, one of the reasons I think that the Secretary ought to have the power to promulgate these rules is that the FAA is really building the supersonic transport. Part of the problem is the sonic boom. And they would, in fact, be writing rules in relation to their own airplane, so to speak. Is the Secretary's office far enough removed from that to take an objective and hard look at these problems concerning the supersonic and sonic boom?

Secretary BOYD. Yes, sir. I do not think there is any question about that.

Senator PEARSON. It is good to have it on the record.

Secretary BOYD. I am glad you asked that question, Senator.

Senator MONRONEY. On page 4 you mentioned in the top paragraph: "Recent tests have revealed that a reduction of 10 EPNdb provides far greater relief from noise than the number might indicate. These tests reveal that such a reduction produces 50 percent less annoyance." It is what the ear hears that we are talking about, is it not?

Secretary BOYD. Yes, sir.

Senator MONRONEY. It is not necessarily the vibration as much as the ear itself.

Secretary BOYD. As I understand it, it is the quality of the noise. And that quality changes with distance.

Senator MONRONEY. This is one of the quotes, I think, from some of the things we learned on our trip out to the west coast. We were briefed by the engine manufacturers who recognize the problem and are trying their best to make significant sound reductions—that is, to the ear. The breakthroughs that this might have would be rather fantastic, would they not—a 50-percent reduction in the ear hearing ability?

Secretary BOYD. Yes, indeed, combined with the compatible land use around the airports.

Senator MONRONEY. You were talking about the board or body that should include, not only the FAA, but DOT. Should other persons

from these agencies, such as the certificate holders, aircraft manufacturers, engine manufacturers, the airline operators, perhaps representatives of the public, be given the right to take part in the standard-making process and/or be given the right to appeal any administrative decision?

Secretary BOYD. Well, I think anybody who can show an interest has a right to appeal any of the decisions and, in fact, to participate in any proceeding. And we fully expect that all of our activities will involve, not only all the Government agencies, but any other interested party.

Senator MONRONEY. I wonder whether you would include, say, the commisisoner of airports of the city or the citizens' representative if there is a large group of citizens surrounding the airport.

Secretary BOYD. Well, of course, as the bill is drafted, the compatible land use would be a local matter. The development of a land use pattern would be a local matter, not a Federal matter.

Senator MONRONEY. But you still have the clash of interest there.

Secretary BOYD. No question about that.

Senator MONRONEY. Whether they would feel better or worse about the decisionmaking process without representation is questionable.

Secretary BOYD. It certainly is the policy of the Department, Mr. Chairman, that anybody who wants to say anything finds an open door, and we listen to them. And we try to publicize the areas in which we are proposing to take action so that anybody who wants to get involved has an opportunity to do so.

Senator MONRONEY. I'll mention one point before I forget it, and I think it is going to be quite important. In your contemplation that we will have noise abatement standards which undoubtedly will include engine noise and the matter of changing the patterns within the nacelles and different things to get the minimum noise level, do you contemplate that there will be a grounding of the present aricraft or a period of time in which the vast billions of dollars of aircraft now flying will be made compatible with the noise restrictions, or will they have a certain time to retrofit?

Secretary BOYD. Certainly, there is no thought on our part, given the present state of technology, of grounding existing aircraft because of noise. However, we do feel that based on advances in the technology, the state of the art, if we are able to come up with some retrofit program which has measurable benefits and which is economically as well as technologically feasible, then we would expect the operators of the aircraft to retrofit within a reasonable period of time.

Senator MONRONEY. This is a very wise statement, I think, because we have to consider the condition as it exists. Aviation is one, if not the principal, means of transportation of people aside from the personal car. This cannot be done overnight. You feel that many of these things are achievable in noise reduction modification of present aircraft in the fleet now flying?

Secretary BOYD. Yes; I think, at least I would like to say, they are within sight. I do not think we have available today in the nacelle design acoustical treatment which we would say on June 17, "This is it," but we are in sight.

Senator MONRONEY. Would you say there can be noise deflectors put

upon planes that might thrust the noise upward or would just scatter the annoyance to a wider area?

Secretary BOYD. I have to refer that to Colonel Foster.

Mr. FOSTER. The reflectors have not been too successful. I think there are other techniques such as acoustical treatment to absorb the sound that appear to be far more advantageous.

Senator PEARSON. Mr. Secretary, let me ask you a question that may be a little bit off the line that the chairman has asked. In the House bill as distinguished from the Senate bill, it says, "the Administrator," in reference to whoever will set forth these rules. It sets forth a whole set of conditions that the Administrator shall consider. One is the relevant available data.

And consult with Federal, State, and interstate agencies.

And make no rule inconsistent with the State.

What is the practical effect of setting out those A–B–C–D requirements? Has that become a checklist to a department or to an administration that they fulfill? Does it really serve any good purpose to set them out? Are they limitations or checklists?

Secretary BOYD. I do not see it as either beneficial or detrimental, Senator. This is the sort of thing we do day in and day out anyway. And it is just frankly a lot of hortatory language as far as we are concerned.

Senator PEARSON. Congressional intent more than anything else, is it not?

Secretary BOYD. That is right.

Senator PEARSON. So if we pass the Senate version and put these same things in the report, we will have done what we really seek to do, is that not right?

Secretary BOYD. Yes, sir. We are concerned with dealing with everybody who has an interest of being sure that we get all of the inputs. After all, our understanding of government is that it is a representative process. And if we do not know what the parties in interest are concerned with, we are not being very representative. And we think we are doing a pretty good job by and large of taking all of these interests into account. And we expect to continue to do so whether or not as specifically stated in any legislation.

Senator PEARSON. When you do specifically state it, you take the chance that you are going to be limited to just that source of inquiry that you have made.

Secretary BOYD. That is right. It tends to be exclusive rather than inclusive.

Senator MONRONEY. Mr. Secretary, a point has been raised as to whether or not you believe the bill as passed by the House confers authority to the Administrator or DOT to amend, revoke, or suspend a certificate for failure to comply with the noise abatement standards which you will issue.

Secretary BOYD. I would like to ask Mr. Perlman to answer that because that is a complex legal question.

Mr. PERLMAN. The House bill does not specifically provide that the Secretary or the Administrator may revoke a certificate. In section 609 of the Federal Aviation Act, that power is granted specifically.

Now, the bill implies that the power may be granted in section 611(a) and in section 611(c) by stating what the Safety Board may

consider in reviewing an action to amend, modify, suspend, or revoke the certificate. We would be happier, however, if the bill were amended to specifically provide for this power.

Senator MONRONEY. That you could suspend the certificate.

Mr. PERLMAN. Yes.

Senator PEARSON. Does not the House bill provide that?

Mr. PERLMAN. The House bill does not specifically provide that. It implies it in sections (a) and (c).

Senator PEARSON. Have you a copy of the bill there?

Mr. PERLMAN. Yes; I do.

Senator PEARSON. Line 7.

Secretary BOYD. What page, sir?

Senator PEARSON. Two, line 7.

Mr. PERLMAN. Page 2 of the committee print is the part that has been dropped. The bill as it passed the House now begins on page 3 with section 611(a).

Senator PEARSON. Well, we will not go into that. I just saw the word "suspension" there and thought it was covered.

Senator MONRONEY. I think for the record I will have the staff counsel read the language as it was passed by the House.

Mr. HUTCHESON. Section 611(a) reads:

> In order to afford present and future relief and protection to the public from unnecessary aircraft noise and sonic boom, the Administrator of the Federal Aviation Administration, after consultation with the Secretary of Transportation, shall prescribe and amend standards for the measurement of aircraft noise and sonic boom and shall prescribe and amend such rules and regulations as he may find necessary to provide for the control and abatement of aircraft noise and sonic boom, including the application of such standards, rules, and regulations in the issuance, amendment, modification, susension, or revocation of any certificate authorized by this title.

Secretary BOYD. We have different versions of the legislation here.

Mr. PERLMAN. We have a different printing of the bill.

If you will notice in that provision and again in section (c), there is only the implication that the Administrator may do so. There is no specific language as there is in 609 of the Federal Aviation Act.

Senator MONRONEY. Since it seems to be blanket authority, would that relate to the suspension of an entire fleet or the suspension of individual planes?

Mr. PERLMAN. The bill covers all the certificates granted under section 6 of the Federal Aviation Act and could cover either. What action would be taken in practice is a different question.

Senator MONRONEY. In other words, if you found noise violation by a major airline in one particular area of conflict—say, Los Angeles—that would then give you the right to ground the entire fleet of Pan American or TWA or JAL or Quantas?

Mr. PERLMAN. If you found a violation by one air carrier, you would not have any right to move against any other air carrier.

Senator MONRONEY. Any other what?

Mr. PERLMAN. Any other carrier.

Senator MONRONEY. But you would have the right to put him out of business.

Secretary BOYD. His airline is found to be guilty of a noise violation in one geographic area. Would this act then give us the authority to ground all the aircraft in that company's system?

Mr. PERLMAN. I would think that would be too broad a reading of the statute.

Senator MONRONEY. The power would appear to be there. What I am thinking about is an airplane that might be too noisy for Washington National but would be just hotsy-totsy for Dulles so maybe they start using it.

Mr. PERLMAN. The bill would permit the Administrator or the Secretary, depending on how it finally comes out, to establish in the certificates containing noise criteria different provisions governing particular airports.

Senator PEARSON. Particular airplane?

Mr. PERLMAN. For particular airplanes; yes.

Senator PEARSON. So one airplane could be in violation, but the rest of the fleet could be in compliance?

Mr. PERLMAN. Correct.

Senator MONRONEY. But it would be selective as to the airport. In other words, say La Guardia or Washington National would be more objectionable because of the high density population, or the character of the neighborhoods, over which it takes off and lands than if it were far out in the country as we have been begging cities to build airports in those locations for a long, long time.

Secretary BOYD. As a practical matter, though, Mr. Chairman, I think it would be very difficult to set different standards for two reasons.

One is that the state of technology is going to be at a certain level. And there will not be much we can do about that. We will go as far as we can.

And the other thing is that the operation of the aircraft fleets of the air carriers is such that it is almost impossible, as I understand it, for them to schedule aircraft now. And if they had to schedule them by airport noise criteria in addition to all the other complications they have, I think we might be effectively putting them out of business.

Senator MONRONEY. Well, wait a minute. You have got a case where you cannot come in with your own Jet Star into Washington National after 10 o'clock.

Secretary BOYD. That is very true.

Senator MONRONEY. You can fly a very small, tiny jet into Dulles or Friendship, or you can fly a heck of a big Electra into Washington National. I think these are selective matters with which you are going to have to deal. And certainly there are no complaints about putting jets into the other two outlying airports here in Washington after 10.

Secretary BOYD. That is quite right, but the scheduled air carriers have got to deal with both ends of the spectrum for one thing. They have got the problem of noise with that particular aircraft wherever they take off, even if they go into Dulles. And, then, in addition to that, they have to schedule their aircraft so they can get their planes through their maintenance bases. And I spent a day learning about aircraft scheduling, and I am convinced that Einstein had no more difficulty in developing the theory of relativity than the airlines do finding out how to schedule their aircraft.

Senator PEARSON. Just so I understand you, you hope to set standards of measurement of sound, and then you hope to provide for regulations as to sound per aircraft?

Secretary BOYD. That is right.

Senator PEARSON. And have those uniform?

Secretary BOYD. That is right.

Senator PEARSON. And then whatever the local airports have as a restriction, that is something else again.

Secretary BOYD. Yes, sir.

Senator MONRONEY. Mr. Secretary, do you intend to use the noise-abatement standards which you promulgate in the issuance, amendment, revocation, or suspension of certificates other than those relating to aircraft? Would you apply it to highway noise and things of that kind?

Secretary BOYD. The authority in this act would deal only with aircraft noise. We certainly are attempting through various means to control noise involved with other modes of transportation. We are spending in the highway area, for example, a great deal of money on research and design in order to mitigate the impact of noise with the urban expresways. This legislation itself, however, does not go into that, into any other mode of transportation. But we are conscious of the fact that aircraft noise is not the only noise that is creating problems in the urban environment in which most of us live today. And we are working primarily with research in these other areas.

Senator MONRONEY. Mr. Secretary, a point has been raised as to whether or not you believe the bill that was passed by the House confers authority to the Administrator to amend, revoke, or suspend a certificate for failure to comply with noise abatement standards which you will issue. I am still not satisfied that we know how many aircraft would be grounded or what type of aircraft, what performance of what type of aircraft, whether it is warmup, takeoff, or whether it is the landing or whether it is the variation or even the repair of engines on the field.

Secretary BOYD. Well, it is going to have to depend on the particular type of aircraft. We are dealing with two different situations. We have got a massive investment in an existing aircraft fleet which is still to some extent a mix of both jet and propeller with a number of propjets in the middle. Then, we have a series of new aircraft which are on the drawing boards and the manufacturers will have the opportunity to crank into these new aircraft noise abatement standards which we do not think can be imposed on the existing aircraft fleet. And we cannot treat in my judgment the noise from a 727 the same as we do the noise from a Lockheed 1649. They are just completely different animals. And they have got to be treated separately. And the criteria for each has got to be based on what can we do from the standpoint of technology and reasonable economics in each one of these areas.

Senator MONRONEY. In other words, if you have to revoke a certificate, it would be a certificate to operate a certain type of noisy airplane and not the certificate on a company-wide violation.

Secretary BOYD. That is correct.

Senator MONRONEY. But I get back to my original point, that there is a difference of where that airplane should land. It would be a dis-

service, largely, to the people of Oklahoma if at Tulsa we found the 707's were too noisy, but not too noisy to come into Washington National; we evidently have taken noise into consideration plus safety factors.

What I am saying is that I cannot conceive of a bill that would treat all airports and airport noise disturbance, because that is what we are talking about, alike. Many, many—perhaps more than we realize—airports are beyond the area of important noise nuisance.

Secretary BOYD. Well, there may be some practical situations where this can be worked out. But, unfortunately, most planes do not operate on a round-trip basis from one airport and by taking off from one airport and staying in the air until they come back and land at the same airport. And I really think as a practical matter that the airlines would not find the point of the Federal Government setting different noise levels for different airports one with which they were particularly enthusiastic. I think they would rather know what is the picture, draw us the whole picture and tell us what it is, and then we will either comply with it or we will go to court.

Senator MONRONEY. I am still not clear on whether this will apply systemwide on type of jets. Very few of those, I think, are nuisance making, at least in particular areas. There are a few areas, a diminishing number, I would say, where subdivisions have encroached on the airport. But for those few where there has been no encroaching, I just do not know whether these planes would necessarily require, for the reasons of noise abatement, to be retrofitted or to bar the noisy planes from that area.

Secretary BOYD. Well, there is a considerable amount of flexibility in the legislation. And I would like to make clear that we are not going to attempt to develop any sort of standards, general or specific, without very thorough discussion with the manufacturers and the operators. And if any of them come up with conditions, positions, or proposals which require a different approach than a general approach and if it makes sense, that is all we are interested in. We can do that.

Senator MONRONEY. The category 1 type of airport would have to be as silent as the state of the art could make it; category 2 airport could be a little more tolerant; and in category 3 the noise level could be unlimited.

Senator MONRONEY. It is not the in flight.

Secretary BOYD. If that is what they want, I am sure there is sufficient flexibility to work it out.

Senator MONRONEY. It is not the in-flight problem we are talking; it is the landing and takeoff.

Secretary BOYD. That is right. It is around the airport.

Senator MONRONEY. It is the surrounding airport.

Secretary BOYD. Yes, sir.

Senator MONRONEY. What is the expected cost, Mr. Secretary, of this legislation?

Secretary BOYD. I will have to submit that for the record. I do not have a figure on that cost.

I am sorry to say I do not have a figure on the cost of it. And I will have to submit it for the record.

Senator MONRONEY. Is it your idea if we form these boards of local

people and private citizens and other experts, that they would be compensated for their services?

Secretary BOYD. Yes, sir.

Senator MONRONEY. Do you expect local boards?

Secretary BOYD. I think probably representative boards.

Senator MONRONEY. Industrywide, you mean, or nationwide or——

Secretary BOYD. Yes, sir.

Senator MONRONEY. Nationwide board?

Secretary BOYD. I have, if I may, here a statement which I made for the record in connection with the House hearings on the cost of administering the aircraft noise certification program under H.R. 3400.

Under the proposed certification concept, the cost would be very low since the only activity required would be an assessment of the safety of operational procedures recommended by aircraft manufacturers which is done anyway and a review of noise data submitted by the manufacturer. We estimate that approximately 120 man-hours per aircraft, approximately $2,000, would be involved in assuring compliance with noise certification rules for any new aircraft so certificated. This one-time noise certification cost is only a very small fraction of the cost of alternative approaches such as establishing noise limits through operating rules, since this approach would involve continuously operated noise monitoring systems to jet airports throughout the country.

Senator MONRONEY. And you feel, then, that this would give you the measurable facility?

Secretary BOYD. Yes, sir.

Senator MONRONEY. Reduce the present level of aircraft noise, too?

Secretary BOYD. Yes, sir.

Senator MONRONEY. And your present technology, you feel, is good enough today to do that without a great deal of additional expense?

Secretary BOYD. Yes; we think so.

Senator MONRONEY. But you will have to have a board which is not provided for in here, would you not, in order to bring in these people outside the Government for the setting of what are tolerable noise limits.

Secretary BOYD. Well, we do not see the necessity for setting up a formal statutory board to do this. We feel that our normal procedures will make this possible. And we can do it without any particular formality.

Senator MONRONEY. Will you use a hearing process to set these standards as you would before the ICC or before the FCC?

Secretary BOYD. Well, we would anticipate using the same procedures that go into the development of the FAR's under the Administrative Procedures Act.

Senator MONRONEY. There would be a chance for open hearings by——

Secretary BOYD. There would be a chance for open hearings and certainly be comment provided for.

Senator MONRONEY. I see nothing in either of the bills before us that would authorize the regulation of noise of the sonic boom produced by the military aircraft.

Secretary BOYD. That is correct. We are not seeking authority over any military activity.

Senator MONRONEY. Then it would not cover military?

Secretary BOYD. No, sir.

Senator MONRONEY. Have you had any complaints from military operations? They are not mixed as much as they were, I know, with civilian operations.

Secretary BOYD. To my knowledge, we have received no direct complaints about military aircraft operations.

Senator MONRONEY. Although we are flying supersonic planes in great numbers now, is it true you have no record of complaints from the military boom? We would get some, I think.

Secretary BOYD. We have direct record. We do have information of complaints that the Air Force has received.

Senator MONRONEY. With the very presence of more and more supersonic aircraft in the civilian fleet, including the Concorde, and the Soviet supersonic which will probably be here in a few months, you will go beyond the airport in the concept because this is nationwide.

Secretary BOYD. Yes, sir, that is right.

Senator MONRONEY. And you will have a different problem entirely.

Secretary BOYD. That is correct.

Senator MONRONEY. The bill at the present time does not encompass this idea.

Secretary BOYD. Well, we certainly construe the noise to comprehend sonic boom.

Senator MONRONEY. But it is not in the bill or specifically enough.

Secretary BOYD. It is, yes, sir. Section 611(a), "in order to afford present and future relief and protection to the public from unnecessary aircraft noise and sonic boom." That is on the front page, lines 8 through 10.

Senator MONRONEY. Well, this gets into the most touchy problem of all. Will enactment of this legislation causing direct Federal involvement in the field of aircraft noise abatement and control increase the legal liability of the Federal Government for damage and damage claims caused by aircraft noise or sonic boom?

Secretary BOYD. I would like to ask Mr. Perlman to respond to that.

Mr. PERLMAN. We see nothing in this legislation which would affect the liability of the Federal Government as spelled out by the Supreme Court in *Greggs* v. *Allegheny County*.

Senator MONRONEY. This, of course, is a rather narrow decision involving the procurement of land and the failure to take an approach zone over one of the principal runways. Thus, the plane was approaching about 10 feet over the gentleman's house. I am familiar with that decision. But we did disclaim, and the court sustained us, any liability there. But I wonder, as we enter this field of noise abatement, if you have researched thoroughly whether we will not be having dozens of claims bills before the Congress for damage.

And I can show you a stack about so high that have accumulated from Oklahoma City over the 6 months of sonic boom testing and for which the Government has done nothing in solving this Government-operated test. I think the FAA was terribly remiss in its failure to try

to work out some kind of adjustment in this matter. I believe that if we make Government tests we certainly do have a liability if there is demonstrable cause for the damage. Proof of damage for this abatement of a nuisance caused by a private individual would be quickly acceptable.

Mr. PERLMAN. My comments related to the aircraft noise in the area of airports. In the area of sonic booms where the Federal Government has been the only person to create the booms at this time, the Federal Government has been held liable. We have no experience to go on with respect to what would happen in civil cases involving an airline creating a sonic boom.

Senator MONRONEY. But if you, for instance, prescribed the EPNdB—I have to memorize that one—and then suddenly found you broke a heck of a lot of windows on the approach or the takeoff, would you then be liable because you had prescribed a set of standards that still permitted glass within reasonable distance of an airport to be shattered by the takeoff of the heavily loaded 747?

Mr. PERLMAN. We do not believe we would. Under the Supreme Court decision, the airport is required to take easements, noise easements, and clearance easements, necessary for the operation of the airport. We believe that the fact that the Federal Government sets minimum standards would not create a liability in the Federal Government.

Senator MONRONEY. Would this legislation to any degree preempt State and local government regulation of aircraft noise and sonic boom?

Secretary BOYD. We do not think so. We think this is in the context of minimum standards.

Senator MONRONEY. They could go beyond your minimum standard; is that correct?

Secretary BOYD. I do not think the State could. I would like to have the opportunity to submit an opinion for the record.

Senator MONRONEY. I think we help them, because it is going to be quite a chore if you retrofit the entire fleet of jets or certain types of jet and then suddenly find that at Newark or Garden City, Long Island, Alameda, or Los Angeles International you have constant complaints from the residents of these new high-rise apartments.

Secretary BOYD. I would think that any authority would be related to the airport itself, Mr. Chairman, but we would like to submit a written opinion on that.

Senator MONRONEY. I think it would be wise because the committee should be advised of it.

I am still wondering where the public injection of interest would come in. I am right that in your decisionmaking, standardmaking process, you would have hearings?

SecretaryBOYD. Yes, sir.

Senator MONRONEY. Would there be appeal from those hearings?

Secretary BOYD. Oh, surely.

Senator MONRONEY. They would go through the courts under the Administrative Procedure Act?

Secretary BOYD. Yes, sir.

Senator MONRONEY. If I did not have a complaint against any spe-

cific aircraft or against any specific noise, but if I were running a nursing home, we will say, 3 miles away, would I be entitled to be heard in my complaint before the public body set up to hear them?

Secretary BOYD. Well, I am sure a person would. Now, what we are proposing to do in the Department of Transportation is not to hold hearings on complaints. However, what we are concerned with is establishing criteria. There is not going to be——

Senator MONRONEY. But, the criteria that you prescribe may still rattle windows, and break the glass, and awaken dogs.

Secretary BOYD. That is quite true. But it would seem to me, Mr. Chairman, that a realistic view would be that whatever the situation is today is there. And what we are going to try to do is improve on the situation to the extent we can. But there should be no guarantee and there should be nothing in this record to indicate that the Federal Government is under any commitment to say there will be no noise where there is now noise.

Senator MONRONEY. This would not from a practical standpoint affect any standards of general aviation aircraft; would it?

Secretary BOYD. I do not think so. The jet aircraft in the general aviation fleet would have to comply. On the propeller planes, though, I do not think there is any problem.

Senator MONRONEY. As a practical man, you would say that the propeller planes—propeller-driven planes—are free, regardless of fleet?

Secretary BOYD. Yes, sir.

Senator MONRONEY. It was tolerable, and we assume this is the base from which we start?

Secretary BOYD. Right.

Senator MONRONEY. You get fewer bigger jets because general aviation sometimes has 727's or planes of that character. It would be the actual noise that was involved in this?

Secretary BOYD. That is right. Surely.

Senator MONRONEY. What criteria would you use in determining whether a particular standard you set was economically reasonable?

Secretary BOYD. Well, you have got to relate it, I think, to, first, the cost, the original cost, of any, assuming that we are talking now about some sort of retrofit, the cost of placing it on the airplane, the age of the airplane, the continued useful life, the opportunity to amortize that cost, and the effect that it would have on the operation. If it would require, for example, $100 fare increase to the passenger, I do not think that we would say this was reasonable in any economic sense. If it would require just hypothetically maybe a 50-percent increase in a fare, I think we might say this is all right. But it has got——

Senator MONRONEY. I think you would hear a pretty bad squawk from myself, as an airline passenger.

Secretary BOYD. 50 cents, I am sorry.

(Laughter.)

Senator MONRONEY. If you approve a noise reduction of EPNdB with this new hypothetical engine that we were talking about, it is going to reduce the air noise by 50 percent. If this is very quiet, you are going to have a heck of a lot of cost to the airlines retrofitting these planes with this new 10 EPNdB machine on the wing. It is not going to be buying a small package.

Secretary BOYD. That is right. But I think that as a practical matter, we have just got to work within the range of what is reasonable under the circumstances. I do not think we can foresee all the circumstances. I would say that I think it is going to cost money to provide less noise however you do it.

Now, see noise as a major social problem in this country today. And the large aircraft in and around airports are one of the basic culprits so described. If we are going to deal with this problem, somebody is going to have to pay for it. It is just that simple. The thing that we have got to do is try to see how we get the most for the least money. If we cannot get a satisfactory result with a small amount of money, then we are faced with a real issue as to whether we say we will put more money in or we say to the American public, "It ain't worth it, folks."

Senator MONRONEY. Let's take a specific case. When they went from the straight jet to the fan jet, most of the airline companies rushed in to retrofit with the fan jet due to economy, speed, and a lot of other things. I do not know whether it raised the noise level or lowered it. Which did it do?

Secretary BOYD. Raised it on approach.

Senator MONRONEY. On approach, but on takeoff, no?

Mr. FOSTER. The engine noise is about the same. It decreased the noise exposure on takeoff due to increased performance of the aircraft.

Senator MONRONEY. Do you see—and this is guessing in here—another revolutionary fix that could be put on the very old reliable and very efficient and safe aircraft jet engines of today that could work on noise reduction?

Secretary BOYD. I think we see the acoustical treatment within the nacelle as the foremost possibility. That is going to cost the considerably less than putting a new engine on.

Senator MONRONEY. You have no idea at the moment as to what it would cost the airlines per plane to come up with an adequate reduction of noise?

Secretary BOYD. No, sir.

Senator MONRONEY. You would make it status, would you not? You have to have achievable goals.

Secretary BOYD. Oh sure. We are not going to put the airline industry out of business.

Senator MONRONEY. Or the air passengers out of business.

Secretary BOYD. Or the air passengers. One goes with the other, believe me.

Senator MONRONEY. I see.

Thank you very much, Secretary Boyd. As usual, you were very complete and completely understanding of these problems and also the problems the Congress faces in trying to get into this very disturbing level. Thank you.

Secretary BOYD. Thank you, sir.

Senator MONRONEY. Because of the shortness of time and our anxiety to get this bill before us as soon as possible, I think we could go to one or one-fifteen if that is agreeable to the distinguished president of the Air Transport Association, one of our very favorite witnesses on most subjects. We are happy to have you come forward.

STATEMENT OF STUART G. TIPTON, PRESIDENT, AIR TRANSPORT ASSOCIATION; ACCOMPANIED BY WILLIAM B. BECKER, ASSISTANT VICE PRESIDENT, OPERATIONS

Mr. TIPTON. Thank you, Mr. Chairman.

I am Stuart G. Tipton, the president of the Air Transport Association of America, which represents virtually all the scheduled, certificated airlines of the United States. I have with me William Becker who is assistant vice president of the association and who has devoted a great deal of time to working on noise problems. I appreciate the oportunity to present our views on H.R. 3400, the administration's bill to provide for the regulation of aircraft noise and sonic boom, which was recently passed by the House of Representatives. We support the general principles of this legislation; however, we believe the bill should be changed in several particulars.

The generation of noise by aircraft has long been a matter of deep concern to the airlines. In 1952, long before the jets arrived, the airlines and their pilots established a task group which developed special takeoff and landing procedures for noise-abatement purposes. Since that time, the airlines have worked constantly to reduce aircraft noise.

The airlines and the manufacturers have expended tremendous energy and funds in the pursuit of aircraft noise abatement. Prior to the introduction of the turbofan engine, more than $50 million was spent by the manufacturers on research and development to perfect engine noise suppressors. By 1962, the airlines had installed suppressors on 325 aircraft at a cost of $250,000 per aircraft. By 1965, the airlines had invested nearly $150 million in the installation of these devices.

The airlines also have undertaken the burden of supporting extensive airport improvements for noise purposes. For example, those carriers serving New York's Kennedy Airport have paid more than $11 million at that airport for runway extensions which are required, not for operational reasons, but solely for noise abatement. Special flight patterns requiring the avoidance of residential areas and reductions in thrust have been adopted at many airports. These flight procedures impose considerable costs on the airlines.

Soon after the introduction of jet aircraft in commercial service, the airlines helped establish a nonprofit organization to coordinate nationwide planning and procedures for the reduction of aircraft noise. Known as the National Aircraft Noise Abatement Council, or NANAC, its original members included the Air Transport Association, the Aerospace Industries Association (whose membership includes the principal airframe and engine manufacturers), and the Air Line Pilots Association. The organization was later expanded to include the Airport Operators Council and the American Association of Airport Executives. Unfortunately, these two organizations recently withdrew from NANAC. Since its inception, NANAC has aided in bringing about cooperative noise abatement programs throughout the United States, including the establishment of preferential runways at major airports and creation of community noise abatement committees. NANAC has also encouraged extensive re-

search programs designed to reduce aircraft noise at the source through refinements in aircraft engine and airframe design. NANAC also was instrumental in the development of takeoff and approach procedures to produce the least amount of noise commensurate with safety so as to confine noise to the smallest possible area adjacent to the airport.

Most recently, the Aerospace Industries Association and the Air Transport Association, after initiation of the project by NANAC, have completed development of the first phase of an "operations research model," the purpose of which is to take a systems approach to the total noise problem within the aircraft/airport environment. Its goal is to achieve maximum noise abatement through developing optimum compatibility of aircraft design, flight procedures, and the use of land near airports.

The bill before the committee today, H.R. 3400, is part of the Federal Government's program to alleviate the problems of aircraft noise by (1) reducing aircraft noise at the source, (2) developing noise abatement flight techniques, and (3) fostering the compatible use of land adjacent to airports. The scheduled airlines fully support all these goals.

As we have said, we have no objection to the inclusion of noise as one of the considerations governing the issuance of a type certificate for aircraft. As a matter of fact, this can be a very constructive step in the process of noise reduction, because it encourages designers of aircraft and engines to regard the noisemaking characteristics of their design as a major consideration.

The difficult problem relates to the treatment of the aircraft and engines in operation at the time a new noise reduction technique is made available. The bill before the committee gives to the Administrator broad power to require alteration of existing aircraft and engines if he determines that noise reduction will result. This, of course, is a tremendous economic power, carrying with it the possibility of destroying major investments in flying equipment. It would be hard to conceive of a more drastic power in the hands of Government. We have a current example in NASA's efforts to develop sound attenuating engine nacelles and acoustically treated engine inlets and ducts. The amount of noise reduction which can be expected from the installation of the nacelle and acoustical treatment cannot at this time be ascertained if indeed any significant lessening of flyover noise will result. If these new efforts promise some reduction, and if the Administrator under this legislation were to order retrofitting of the existing fleet, the cost would range from $500 to $800 million for approximately 700 four-engine aircraft. We have not calculated the cost of retrofitting other aircraft now in the fleet, such as two- and three-engine jets. The expenditure of such large sums could conceivably be worthwhile. It is equally conceivable that the actual favorable effect of these tremendous expenditures would be negligible.

We believe that this life-or-death power over airplane operators should not be given to the Administrator, and that his power should be limited to affecting the design of new aircraft. Those who are asked to make these vast investments in the alteration of aircraft and engines should be permitted to decide whether the benefits to be gained by noise reduction justify the cost.

It must be remembered that scheduled airlines are subject to great economic compulsion to operate more quietly. At the present time, we are operating our airplanes quite inefficiently in and out of many airports in order to avoid making excessive noise over residential areas. In a number of places we are severely reducing the capacity of airports by reason of operating procedures which are costly and time consuming. The air traffic control system in terminal areas is made much more complex, and delays are increased because of the use of these procedures. It is hard to tell how many millions of dollars each year are lost by reason of following noise abatement flight procedures.

In addition to all that, of course, the airlines are a public service industry, and are constantly seeking the patronage and approval of the public generally. It does us no good to annoy people, and we can gain great advantage by not doing so. Thus, the determination as to whether a particular major retrofit should be made can safely be left to the airlines—guided by all of the considerations which I have just described.

I suppose it could be argued that our fears are unfounded, because the Government has long had the power to impose the safety requirements with respect to equipment in service and to require changes in them. It could be said that the exercise of this power senselessly could bankrupt the industry, too. However, these cases are different. In the safety field, the state of the art is reasonably well known, and the steps that can be taken to improve safety can be reasonably well defined. Thus, there is a built-in limitation on the exercise of arbitrary and destructive power. In the noise field those who are bound to decide on these questions are ultimately governed by ill-defined neighborhood reactions. It has never been possible to make a really good determination of how much noise is too much because both individuals and noises differ. It never will be possible to establish a very good standard.

Thus, the scope of the power of the Government in this instance is far broader than in the case of safety, and judgments in this field are far more difficult to arrive at. In short, determination of safety issues can be matched against measurable values. Determination of noise questions necessarily reflect the subjective reactions of large numbers of people.

Another provision in the bill which the airlines find disturbing is its application to certificates. The Administrator would apply noise standards, rules, or regulations to any certificate authorized by title VI. This means that the Administrator would be empowered to amend, modify, suspend, or revoke these certificates for reasons of noise abatement. This includes aircraft, engine- and propeller-type certificates; production certificates; aircraft airworthiness certificates; airmen's certificates, air carrier operating certificates; air navigation facility certificates; and air agency certificates such as those issued to flying schools and aircraft and engine repair stations. It is not clear why the Administrator's noise certification authority should extend beyond that relating to the source of the noise itself—the aircraft. If it is considered appropriate to impose penalties directly on pilots or carriers for the violation of noise rules or regulations, the Administrator has ample authority under the Federal Aviation Act to assess

fines for such violations. The bill's provisions concerning certification for noise should be limited to aircraft-type certificates.

A number of important procedural safeguards are missing from H.R. 3400, in our opinion. Although the House report accompanying the bill gives assurances that section 611(c) would offer a certificate holder all the rights to which he would be entitled under a section 609 safety proceeding, examination of the actual provisions of subsection (c) do not adequately bear this out. As written, that subsection would not give the person whose certificate is affected an opportunity to answer the charges or reasons relied on by the Administrator, nor would he have the right to be heard in opposition.

Further, on appeal to the National Transportation Safety Board, although the report indicates that the appellant has the right to a de novo proceeding before the Board, with all the attendant procedural safeguards, H.R. 3400 does not spell this out.

Moreover, there is no provision in H.R. 3400 for judicial review after exhaustion of administrative remedies. Again, section 609 spells out this right. All these deficiencies are caused by an attempt in the bill relating to noise to incorporate by reference the provisions of section 609, relating to safety. The results are inadequate procedural safeguards for the certificate holder.

Even the limited safeguards in H.R. 3400 are restricted in their application to actions of the Administrator where noise rule violations are at issue. No justification appears to exist for tying basic procedural rights to the violation of noise standards or rules. The certificate holder must be permitted to appeal from actions other than those relating to violation, particularly when nothing in the bill would restrict action on certificates to violation cases.

As a final commentary on the bill itself, I would urge the committee to retain the amendment made by the other body which places authority over noise in the Administrator of the Federal Aviation Administration rather than in the Secretary of Transportation. The House committee states the reason for such amendment as well as it can be stated. I am quoting from the committee now:

> Because of (the) close relationship to safety, the committee felt that this new authority relating to noise and sonic boom should be administered by the person charged with the responsibility for safety in air commerce and air transportation. Accordingly, the committee amended the introduced bill to place this authority in the Administrator of the Federal Aviation Administration.

We feel strongly that the Administrator must be the sole certificating authority to insure against safety considerations being compromised in any way by noise abatement objectives having a distinct and separate purpose. Safety should never be subservient to noise.

I should point out right at this point that Senator Pearson was concerned about a possible conflict of interest here. And he suggested that in view of the importance of noise and sonic boom in the design of the supersonic that possibly this power should be in the Secretary. I should point out here that the power to develop the supersonic airplane is in the Secretary. So to the degree that conflict of interest plays any part here at all—and I do not think it does—transferring this power to the Secretary would accentuate the problem rather than reduce it.

In conclusion, the airlines agree that appropriate noise and sonic boom conditions should be included in the certification of new aircraft. It should be stressed, however, that the mere passage of this legislation will not solve anybody's noise problem. To reduce noise at the source—the engine—will require several years of research and development. Even if a "quiet engine" is someday developed, everybody's noise problem will not be solved. The airlines believe that any effective program to abate aircraft noise must include an active plan to assure that the use of land adjacent to airports is made to be compatible with the airports.

We, of course, were delighted to hear the discussion between the committee and the Secretary of Transportation on that subject.

We have attached for your consideration a technical memorandum concerning the problems of developing a "quiet" engine, as well as a draft bill which incorporates the changes we believe are necessary and which also, in our opinion, removes the ambiguities of H.R. 3400.

Before concluding my testimony, Mr. Chairman, I would like to point up some of the changes in the bill which we found necessary and to explain them. I do that because in discussing this problem with the Secretary, the committee found some difficulty with some of the provisions. Some of these difficulties, I think we may have cured in the bill we suggest to you.

Turning to page 3 of the House passed H.R. 3400, let me direct my attention for 2 or 3 minutes here to describing and explaining specific changes.

It will be noted that in section 611(a), you have two statutory objectives stated—one at the beginning of the paragraph which says, "In order to afford present and future relief and protection to the public from unnecessary aircraft noise and sonic boom," that is one statutory objective.

Down on lines 10 and 11, you find another one—"as he may find necessary to provide for the control and abatement of aircraft noise and sonic boom."

There really is nothing wrong with either one of those two statutory objectives, but they are stated differently and the revision amendment to that. There is only one statutory objective stated and thus eliminates future ambiguity.

Senatory MONRONEY. How would that read? I have not been able to follow you.

Mr. TIPTON. In revising it——

Senator MONRONEY. Do you have a bill attached to your statement?

Mr. TIPTON. Attached to our statement.

Senator MONRONEY. What paragraph is that?

Mr. TIPTON. In the bill attached to our statement, in subsection——

Senator MONRONEY. Substitute the new language for the printed language on page 1 of the bill, 611?

Mr. TIPTON. That is right. Our subsection (a) substitutes for subsection (a) of the House-passed bill.

In addition to that, you will notice at the end of subsection (a) of the House-passed bill, the whole process of certification is provided for in a rather ambiguous three or four lines which starts, "Including the application of such standards." It seems to us that if this was going

to be done, and if they were going to use it, the precise method of applying these should be stated. So that we have said flatly that prior to issuing an aircraft type certificate, the Administrator shall find that the aircraft for which the certificate is sought meets such standards, rules, and regulations. That eliminates any fuzziness as to just exactly how those standards will be applied.

There was some discussion in the House-passed bill of the considerations mentioned in subsection (b)—general standards to be laid down by Congress there to guide the Administrator in applying this. It was indicated that——

Senator MONRONEY. Excuse me. I am trying to follow both your bill and the original bill and to underline in the bill changes which occur. We can have the staff do that after the recess.

Mr. TIPTON. We would be glad to present this, but I did want to explain them briefly. We will take these specific amendments up with your staff.

In the establishment of statutory standards on page 4 of the bill—and this is a matter not of drafting, but of major substance—on page 4 of the bill, line 4, the provision is made—

I am sorry, page 3, line 24, and then over on the same place, the word "consider" is used, which says that the Administrator——

Senator MONRONEY. What page?

Mr. TIPTON. Page 3, line 24—consider whether any proposed standard——

Senator MONRONEY. How does it begin?

Mr. TIPTON. I am sorry, I apparently did not have the bill as passed by the House so we have got the lines wrong. The text is the same.

Page 2, lines 18 and 22. Both of those start with the word "consider." We believe that the word should be "determined." If there is any conflict, for example, with safety, the Administrator should determine before establishing a standard that there is no conflict with safety, not merely consider it.

Senator MONRONEY. In other words, in the choice between noise and safety, you choose safety. Is that correct?

Mr. TIPTON. That is right. I think that is the way it must be administered.

Then, turning—and I will wind this up very quickly now that I have the right bill—to page 3, line 8, it is that subsection, subsection (c), which provides for all the procedural safeguards for certificate holders. We have revised that completely in order to avoid the difficulty that counsel for the Department of Transportation was having this morning. As he pointed out, the action to amend or modify or suspend the certificate is only covered in the present bill by inference. We have revised that completely so as to make it specific and report and repeat the procedure.

Senator MONRONEY If I understand you correctly, you do not feel there is an appealable right on safety, but you do feel there should be an appealable right on noise?

Mr. TIPTON. No. What we are anxious to do is provide for the same appeals and appeal rights that we now have for safety problems for noise problems. We just want the procedure to match.

Senator MONRONEY. You want that on the same level?

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Mr. TIPTON. I want the procedure to match.

Senator MONRONEY. I would almost be inclined to give noise a more minor position, actually, than I would on the safety features, because I think safety is mandatory and noise suppression is desirable.

Mr. TIPTON. Of course, that statement of principle is right. But the economic impact on a particular aircraft owner is tremendously heavy or can be tremendously heavy in either respect. And consequently, he should have his rights safeguarded by provision for appeals.

Senator MONRONEY. Would you advocate the public having the right to appeal also?

Mr. TIPTON. No, I do not think I would. They have their judicial rights safeguarded under the common law. They have them now.

Senator MONRONEY. They can sue.

Mr. TIPTON. They can sue.

Senator MONRONEY. Suppose, you have an established noise level, EPNdB, and you defend against the blasting over a woman's house adjacent to the end of the runway. She claims damage to her nerves as well as to her old china. If you establish that this is within the allowable limits, would you be excused from any degree of liability? I think, that would be for a court to determine.

Mr. TIPTON. I do not know the answer to that.

Senator MONRONEY. I think we are concerned with liabilties and the excuse for liabilities. There are certain situations that would permit the nationwide EPNdB and so forth, but under certain circumstances, such as the Pittsburgh case, it would not be compensable.

Mr. TIPTON. That whole field is so complex that I should not try to say offhand. As I see how this new certification process is going to work, the FAA is going to establish a standard just as they establish a safety standard. And it is going to be something like this: If you operate the airplane to take off in a particular way, you will make not more than so many decibels of noise at a particular location. That is as I understand or contemplate that will be done.

Now, that will apply to all airplanes holding that certificate, all airplanes of that type.

Senator MONRONEY. For all airports, which worries me, because there are a lot of airports where noise is no factor whatsoever. There are other airports such as Washington National on IFR that puts them over the beloved folks of Georgetown and of Alexandria who do not like to be disturbed, so the calls multiply on a ratio of 10 to 1 on a VFR approach that can go down and up the river.

What I am driving at, and I would like to talk to your more about this afternoon, is whether we have in our airport categories, category 1, 2, 3, and 4 perhaps different perceived decibels of sound that will be tolerable at the Dulles Airport or Friendship Airport or Oklahoma City, Will Rogers International, or Tulsa, but would not be tolerable elsewhere. I think we have two airports in Oklahoma City, one east of town and almost on a direct line west, Tinker Field, where B–52's and C–5A's come and go, making more noise on one side of town than on the other. Yet they have the same approach patterns, and the same radar control. You have to clear radar going over Tinker Field. So you make fish of one and fowl of another. This is why I think you have a multiple problem that should be governed accordingly. You

should use the discretion which you have used as a pattern of safety in old four-engine jets coming into Washington National. Of course, there is safety and also a suppression of noise.

Mr. TIPTON. I think you are dealing with a problem that is a hard one in this area, but I think it can be solved. And I think it will be solved pretty much like this: The noise standards prescribed for the certification of a type of aircraft like the DC–9, let's say—it will have a certificate, and it will have to meet a noise standard of the kind I described—cannot make any more noise than so much if it is taking off this way. That is the way they set safety standards, too. That is the way it will be. All DC–9's will have to meet that. But that has to be applied with respect to all DC–9's in the fleet because you cannot change them. They are all alike.

The way you deal with the varying conditions at airports is by the exercise of another power conferred by this bill to adopt rules and regulations dealing with noise abatement. Presumably, the noise standard originally arrived at cannot be the lowest common denominator. You cannot accommodate every air port in the country in its circumstances with that noise standard alone. You take up the individual situation of each airport by the establishment of operational rules relating to that airport like we have now, such as traffic patterns and preferential runways. But, for safety reasons, the takeoff and landing profiles must be as uniform as possible throughout the country.

Well, we have worked for endless years to work out specific ways of taking an airplane off and landing it so that it makes the least noise. And that can be established by regulation. We do not have any specific regulations at Washington National, but definite noise traffic patterns here are set down, and we follow them.

So that first you certificate a fleetwide standard. Then you, in addition to that, have operating rules relating to the airport. That is the same way we do with safety. For example, each airplane meets a set of safety standards, but that does not end the matter. At each airport, we have prescribed procedures. And we have prescribed minimums and that sort of thing which fit that already safe airplane into the peculiarities of a particular airport. I think that is the way it is.

Senator MONRONEY. You could do that with sound.

Mr. TIPTON. That is right. I assume that is the way it would be done.

Senator MONRONEY. In other words, you would have certain flags on certain airports indicating that you better not come in here with that noisy bird. With the quite bird, you could come in. That is what I am talking about. You cannot make every foot fit every shoe. There are going to be airports, regardless of how quiet you get the planes, where you will get a lot of yak. It would still be possible, then, to bring in other equipment. With the great genius of the Air Transport Association and its very progessive members, you could even provide some STOL service and more flights. You can reduce the sound decibels over Georgetown and Alexandria by over 50 percent by putting 50 percent the landings and takeoffs at Washington National into Dulles, and finding a National STOL that would bring you into the city just as quickly. I think you have been terribly remiss in not considering

that more and more your machines are going to demand greater open space and greater distance from the airports.

You and I both know that. I hate to think that it is going to take a terrible tragedy at La Guardia or Washington National or others to bring about the placing of planes into this type traffic pattern or under other conditions which on instruments are not the most desirable. They are safe, but the margin of safety is not there.

Mr. TIPTON. This gives me an opportunity to make the comment that the Secretary said I would make when you and he were discussing this problem. And I am very glad to make it.

The 11 carriers who serve Washington National quite some time ago undertook in a certificate proceeding pending before the CAB to underwrite the operation of a helicopter service. Now, I do not think we have studied the many problems involved in running a STOL service here. One of the problems would be to provide some downtown service. I mean close to the downtown area which you could conceivably do with a helicopter. But even the best of the STOL's do take some runways. So that we have made this constructive offer to operate this helicopter service connecting Dulles, Washington National, downtown Washington, and Friendship. And that would, I think, provide some assistance.

Senator MONRONEY. If you give me Washington National and get me a STOL out of there, I will be happy. Maybe we will have it in a few weeks. I hope so. But I think it is long overdue. We can cut down, and I think you will find the passengers willing to cut down and go to Dulles and go to Friendship if they can park their car in the parking lot of Washington National and come back and get it, no matter which airport they land at. It is awfully embarrassing to be told it is 2 hours after missing a plane at Friendship before you can catch a plane at Dulles.

Mr. TIPTON. I was pleased to notice that two companies in combination were prepared to offer Washington National, Dulles, and Friendship fixed wing service. I think that operation is going to give us some very badly needed information as to how that works.

Senator MONRONEY. It will help. I think it will be a pilot project that would grow. Eventually, with the state of the art in the air, perhaps somebody could bridge over the little used tracks at Union Station to provide a downtown STOL airport. I know Los Angeles is figuring on that. You are going to have your VTOL, but you are not going to have it profitable until you get your rigid rotor. That is probably 5 years away.

I think the cost of making it is the low capability on your choppers. Nice as it is for special service, it is not going to be a general service airplane, but frequent service in the six-passenger plane or 21-passenger twin rotor that will actually save you two-thirds of the time that you now spend beating your brains out on this terrible road to Friendship or the fine road to Dulles which is always overcrowded at the time you want to take a plane.

So I do hope you will give some attention to this. It is your problem as well as the passengers' problem.

Mr. TIPTON. We are, indeed. There is no doubt in the world that so far as the airlines serving Washington are concerned, the distance from downtown to either Dulles or Friendship is a great problem.

And it puts a high premium on the use of Washington National simply because it is close by. If we can cut down the time through one measure or another to either one of those fields, it would help a great deal.

Senator MONRONEY. Washington National is almost adjacent to Alexandria and to Arlington. It is not too bad for Bethesda where you live or certainly good for Georgetown. It is convenient to the Capitol and to downtown Washington, and I do not see any reason that it cannot work. You could take a taxi and a different traffic pattern out to Dulles and arrive in about 8 minutes. That is a heap saved in an hour's time.

I just hope this will lessen to a degree the demands for abnormal or unsafe flight regulations or insisting upon them in order to lessen the noise level. I commend your interest in that.

If we can resume about 2 o'clock, it would be fine. Would that be convenient with you?

Mr. TIPTON. Certainly.

Senator MONRONEY. Thank you very much, sir.

The committee will stand in recess until 2 o'clock.

(Whereupon, at 1:15 p.m., the hearing recessed, to reconvene at 2 p.m. the same day.)

AFTERNOON SESSION

Senator MONRONEY. The Subcommittee on Aviation of the Commerce Committee will resume the hearings.

We are going to have E. Thomas Burnard, executive vice president of the Airport Operators Council International, as our next witness; if you will come forward, Mr. Burnard. We regret keeping you waiting.

STATEMENT OF E. THOMAS BURNARD, EXECUTIVE VICE PRESIDENT, AIRPORT OPERATORS COUNCIL INTERNATIONAL, ACCOMPANIED BY J. DONALD REILLY, DIRECTOR OF LEGAL SERVICES, AIRPORT OPERATORS COUNCIL INTERNATIONAL

Mr. BURNARD. Thank you very much, Senator. Since I know you are pressed for time, I will be glad to submit a prepared statement for the record and limit my remarks to a few key points that I would like to emphasize.

Senator MONRONEY. Please feel at liberty to proceed in your own manner. We will be delighted to have your testimony, both the formal part and the informal part.

We appreciate your very keen interest. After all, you are at the focal point of the problem between the airlines and the public. The airport operators usually take the brunt of noise which they don't create.

Mr. BURNARD. I am afraid you are right, Senator.

I want to thank you for scheduling hearings on this proposed legislation. As you know, it has been a subject that is very complex and has been dealt with by many of us over a period of many years. We think that these hearings are a great step forward in finalizing at least this phase of the noise abatement program.

I would like to emphasize just four points in connection with our statement.

The first one is the need for prompt enactment of this legislation. Noise is now one of the most serious deterrents to finding new airport sites and expanding present ones. Without this legislation, and the effective use of it by the administration to control the source of the noise, lack of suitable airports may also be a great deterrent to aviation growth.

Nationwide attacks are being mounted against water and air pollutions, and yet inadequate attention has been given to date to the equally serious national problem of pollution of our environment by excessive aircraft noise and sonic boom.

Prompt enactment of this bill is therefore required in the public interest in order to make possible a tolerable environment for all U.S. citizens and to assure an orderly growth of aviation.

The second point I want to emphasize is that noise must be attacked at the source, and that this proposed legislation will permit that to be done for the first time. Only the Federal Government can provide the incentive and authority to require reduction of aircraft noise at the source by the development and promulgation of national noise standards, rules and regulations, and their application to all aircraft through the process of type certificates, airworthiness, and operating certificates.

Today's aircraft noise problem is created by today's aircraft. The only effective way to resolve the noise problem associated with the present aircraft is to enact this legislation in the same form that it was passed over from the House.

Increase volume of operations of present aircraft types, if unrestrained, will create increasingly intolerable situations to the citizens and prevent the orderly expansion of aviation ground facilities. The aircraft manufacturers, the FAA, and NASA have all stated in one form or another that significant reductions in noise are achievable now by modifications to today's jet engines and the design of new ones, and this legislation can assure that that takes place. The only effective way to insure that future aircraft are designed and built to be compatible with our urban airport environments is to provide the Federal Government with this authority.

This legislation and the ensuing regulations therefore should provide the incentives to reduce noise at the source that have heretofore been missing.

The next point, Mr. Chairman, is that of safety. It has already been discussed today, and we just want to assure you for the record that passage of this bill is not intended to, nor will it, adversely affect flight safety in any way. It will simply assure that aircraft will be both safe and tolerable to people on the ground.

Lastly, Mr. Chairman, I would like to mention that this legislation has very broad support. As the Secretary of Transportation noted this morning, it was originally recommended by the White House Interagency Committee on Aircraft Noise Abatement. It was proposed by the administration and strongly supported by it. It was approved by the House of Representatives by an overwhelming vote of 312 to 0.

And it is also supported by all of the major public interest groups, in addition to our own, such as the National League of Cities, the U.S. Conference of Mayors, the National Association of Counties, et cetera. Mr. Chairman, they will file statements for the record.

The press is also behind this legislation. I just noticed that in this morning's New York Times there is an editorial, and I will read two sentences from it that are pertinent.

> Now that the House has passed unanimously a bill authorizing the Federal Aviation Administration to set and enforce noise standards for aircraft, the Senate needs to get abroad. Jet noise levels have been rising steadily, and sonic booms threaten to shadow the quiet of many American communities. It is time for Congress to protect America's eardrums.

The Washington Post this morning had this editorial, in part:

> After dozens of bills, years of delay and uncounted millions of decibels, the House has approved legislation to control aircraft noise and head off sonic boom.

The editorial goes on:

> The House bill instructs the FAA to consider not only noise but safety, technical practicability and economic reasonableness. Many citizens will feel that the FAA already considers these other criteria, especially the last, too much.

The editorial concludes with this sentence:

> The House bill nonetheless merits respect, and Senate support, as a first step. Its significance is that finally the demands of the public are being heard in Congress over the roar of aircraft, airline, airport, air traveler and air bureaucrat interests too little concerned with noise.

In conclusion, Mr. Chairman, I would like to say that for these reasons we respectfully urge the prompt enactment of this legislation. We believe it is essential to the progress of aviation as well as to the progress of community development. Failure to exercise prompt Federal control over aircraft noise can only result in increased social disorders in communities near airports, increased inability to find suitable new airport sites and expand old ones to accommodate the burgeoning growth of air travel; increased pressure by local groups for banning flight operations during specified hours of the day on particular runways at specified noise levels, and perhaps at particular airports, with the consequent chaotic effect on the air transportation system; increased inability by airport planners to accurately predict future land requirements for airport expansion and new airport developments; increased capital requirements for expansion of airports to cope with aircraft noise; increased litigation by property owners over the alleged damage to their property values; and increased pollution of the environment in which man must live.

Mr. Chairman, before I finish my summary remarks, I would like to say that we heard the proposal by the Air Transport Association this morning, and we haven't heard any valid reasons given to date as to why this particular bill, as reported by the House, should be amended.

The ATA's proposal, which I have only had a few minutes to look at, would seem to limit the authority of the Government to control noise only with respect to future aircraft. We think that cuts out much of the heart of this bill because a great deal of the problem is with today's aircraft. And with increased number of today's type of air-

craft and increased volume of operation, the situation is going to get worse unless the Government exercises some control.

The other aspect of the ATA's proposal that I would like to clarify is that they suggest that only type certificates be included in the authority. We think that is limiting the authority far too much. It has got to include not only the type certificate issued to the manufacurer but also the airworthiness certificate and the operating certificate which the airline must have in order to operate the aircraft.

And lastly, and one of the most important aspects, is that operating standards be developed and included in the operating certificate. I think Mr. Tipton did say this morning he feels that both the type certificates and the operating standards are necessary; however, the legislative proposal that he put before the committee—at least at a first reading—doesn't appear to include the operating certificate aspect of it.

Mr. Chairman, we respectfully urge the subcommittee and the Senate Committee on Commerce to approve this legisltaion and report it to the Senate as soon as possible.

(The prepared statement follows:)

STATEMENT OF AIRPORT OPERATORS COUNCIL INTERNATIONAL (INC.)

Mr. Chairman and members of the Subcommittee, I am E. Thomas Burnard, Executive Vice President of the Airport Operators Council International. AOCI is a voluntary, non-profit association of 126 organizations and public agencies which own or operate more than 500 public airports in the 50 states and in other countries around the world.

Our testimony today represents the collective views of the city, county and state AOCI members in the United States; and on their behalf we wish to thank you, Mr. Chairman, and members of this Subcommittee for the opportunity to express our support for prompt passage of H.R. 3400 as passed by the United States House of Representatives on June 10, 1968.

In scheduling these hearings, this Subcommittee has focused urgently-needed attention on a forgotten front of today's war on the pollution of America's physical environment.

Nationwide attacks are being mounted against water and air pollutants. Yet inadequate attention has been given to the equally serious national problem of pollution of our environment by excessive aircraft noise and sonic booms.

We believe it is of prime importance and of great urgency for this Congress to authorize and direct a federal program of aircraft noise control and abatement. Enactment of H.R. 3400 would be the first major step to be taken in this direction.

THE AIRCRAFT NOISE PROBLEM

The reason that an aircraft noise problem exists today is simply this: No control exists over the amount of noise aircraft can make!

Until the introduction of jet aircraft, civil airports had generally existed in harmony with their neighbors. When the commercial aircraft operators began, in 1958, to substitute the larger jet transports for propeller-driven aircraft, the noise problem began to grow. This airline reequipment program forced upon the federal government and upon local communities which own and operate public airports, the burden of expanding airport dimensions to accommodate the new takeoff and landing needs of the jet aircraft. This resulted in wiping out previous "buffer zones" by pushing airport boundaries about a half-mile closer to neighboring residential populations. It also created a new, more annoying, and somewhat frightening sound.

Airport management sought answers to this vexing problem. They continued to lengthen their runways, push out their airport boundary lines, buy "clear zones," revise airport master plans, change runway layouts, close some runways, and seek other local solutions. They sought the cooperation of the airlines and FAA in preferential runway and noise abatement programs. But finally, finding all

these tools inadequate to decrease the noise from an ever-increasing number of aircraft, they turned to the Executive Branch and to the Congress for a national solution to a national problem.

WHY AIRCRAFT NOISE IS A NATIONAL PROBLEM

It is clear that the greatest potential ability to control noise rests with the federal government. Airlines, manufacturers, pilots and airport operators have all tried—both individually and collectively—but without success. The solution does not lie in local communities bankrupting themselves trying to "buy out" all airport neighbors who allege annoyance or damage by the ever-increasing aircraft noise. What happens when the next family of noisier jets comes along? Must millions of property owners sell their property or be restricted in its use, or should restrictions be placed on the amount of noise aircraft can make? We believe it is in the public interest that reasonable restrictions be placed on the aircraft—both today's and tomorrow's.

Aircraft noise is a national, and an international problem because it is produced by the aircraft which operate in the navigable air space. Only national governments can effectively control aircraft for noise purposes both at the time of certification for construction and in operational rules and certificates.

The Executive Branch has recognized that aircraft noise is a national problem that requires a national solution.

In President Johnson's 1966 Transportation message to Congress, he noted that aircraft noise is "a growing source of annoyance and concern" which will continue to grow. He said:

"It is clear that we must embark now on a concerted effort to alleviate the problems of aircraft noise."

He then appointed his Science Advisor, Dr. Donald F. Hornig, to head up a federal interagency group to develop an action program including "legislative or administration actions needed to move ahead in this area."

Dr. Hornig's White House group recommended that the first legislative step necessary to solve this problem is to give the Department of Transportation and the Federal Aviation Administration the necessary authority to control noise at the source. H.R. 3400 is the embodiment of the Administration's views of this subject.

Dr. Hornig said in a letter in June of last year to a member of Congress:

"Concerning noise standards, I regard the passage of legislation authorizing the Secretary of Transportation to set aircraft noise standards to be critically important. In the long run it is the only way I can see to protect the public interest in this respect * * *." (Congressional Record, June 7, 1967, p. A2874)

In addition to the support Dept. of Transportation Secretary Alan S. Boyd gave this legislation in hearings conducted on H.R. 3400 by the House Subcommittee on Transportation and Aeronautics on November 15, 1967, he advised this Senate Aviation Subcommittee on August 28, 1967, that the Congress should "enact legislation which will permit us to set maximum noise standards and to enforce those standards through regulation. We also need the legal authority to include noise consideration in the government certification of aircraft."

He pointed out also that, although this legislation is not the complete solution, it will, however, "permit us to provide the assurance to communities suffering from the noise impact that noise emissions will at least not get worse, and will assure that as technology can accomplish it, noise levels will be lowered."

In testimony before the House Interstate and Foreign Commerce Committee early last year (March 8, 1967), FAA Administrator McKee emphasized that,

"We regard enactment of the bill [H.R. 3400] as a most important step in our efforts to alleviate the noise problem. Perhaps of greatest significance is the authority it provides for the application of noise standards in the certification of aircraft. We believe this authority is essential to the achievement of any real progress in the reduction of aircraft noise at its source."

THE URGENT NEED FOR LEGISLATIVE ACTION

As these federal officials have explained, enactment of this bill is essential to controlling noise at the source. The urgency of the need for such control increases with each day—and for a variety of reasons.

First, aviation is America's fastest growing industry. This means that jet service is moving into more and more airports. There were only 16 airports

served by jets in 1960. This year more than 150 airports have jet service. Nearly 350 are predicted by 1970, and more than 500 by 1975. This is no longer just a "big city" problem. It is rapidly becoming a common problem throughout the world.

Growth also means more jet aircraft and more jet flights.

In 1960 there were 224 turbo jet airline aircraft. And in that year, there was a total of 26 million aircraft movements in the U.S. at air ports with FAA control towers. 7.3 million of these were air carrier movements.

By 1966, the number of airline jet aircraft had quadrupled and one in every 3 take-offs at U.S. airports was a jet. Total aircraft movements had nearly doubled—to 47.8 million.

By 1973, there will be two and a half times as many airline jets as there are today. And by 1977 the number of air carrier flight movements will have doubled. Total aircraft movements will double by 1974 over 1966.

General aviation, in the meantime, will have grown even faster in numbers of aircraft and aircraft movements.

Thus, if nothing is done to significantly improve the noise characteristics of aircraft, increased volume of operations *alone* will expose more people to more noise.

Future aircraft—the Jumbo jets, Air-busses and Supersonic Transports—all bigger and more powerful than any of today's aircraft are expected to be introduced into service in the next three to five years. Are these aircraft to be built to strict safety standards * * * but not to noise standards?

Aviation history has shown that with each new technological advance in aircraft, the manufacturers and their customers wring every ounce of economic productivity out of them. But, there are no profits in reducing noise and there are no regulations to control it. Thus, if the benefits of technology are to truly enhance the public interest, then reasonable restraints are necessary to assure that aviation development stays in balance with the development of communities. It is unrealistic to require that community development continually adjust to aviation development.

Prompt passage of H.R. 3400 is also solidly supported by important national organizations representing state and local public bodies. These include the National League of Cities—representing over 13,000 U.S. cities with populations in excess of 40,000; the National Association of Counties—representing over 3,000 county governments in the U.S.; and the United States Conference of Mayors. These national groups support the views we express here today and, in addition, will also file statements for the record.

In addition, the wide-spread support of this legislation by the House of Representatives is evidenced by the passage of H.R. 3400 on June 10, 1968 by the resounding vote of 312 to 0.

Finally, Congressional action is urgently needed in order to help solve the aircraft noise problem in the international field as well as domestically.

In the very near future, the Anglo-French supersonic transport—the Concorde—will make its maiden prototype flight. It will need U.S. airworthiness certification for its United States airline purchasers who must decide on the exercise of their purchase options this year. Under existing laws and regulations, the Concorde won't have to meet *any* U.S. federal noise criteria. And until the U.S. government has the authority to set its domestic noise standards, no meaningful international noise standards will be possible.

All advance information about the Concorde clearly indicates that it probably will be noisier near airports than existing aircraft. Should this prove to be the case, and should it not be required to meet U.S. federal noise standards, then how could the United States justify imposing meaningful noise standards at a later date on U.S. built aircraft?

Gentlemen, the hour is late.

As early as October 1960, the House Committee on Science and Astronautics, after comprehensive hearings, concluded, among other things, that

* * * * * * *

"(5) There is no impartial, highly qualified Government group specifically charged with the responsibility for formulating noise criteria, [and]

"(6) Even if a set of noise criteria was established, satisfactory to industry, the public and the Government, it is questionable if the FAA has under the pres-

ent law the regulatory authority to enforce it." (House Report No. 2229, 86th Congress, 2d Session, Oct. 13, 1960, p. 50)

In 1963, the House Interstate and Foreign Commerce Committee recommended, among other things, that

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"11. Should the Authority of the Federal Aviation Administrator to promulgate air traffic rules which seek to alleviate the impact of aircraft noise on persons and property on the ground be found by him to be inadequate, he should report this fact to Congress and seek whatever additional authority is necessary to achieve that end." (House Report No. 36, 88th Congress, 1st Session, February 27, 1963, p. 28.)

Mr. Chairman, the Department of Transportation and the FAA have found their authority questionable in this field; they have reported this to Congress; and they do seek such additional authority as they consider necessary to solve the problem!

CONCLUSION

For these reasons, we respectfully urge the prompt enactment of H.R. 3400, as passed by the U.S. House of Representatives on June 10, 1968. We believe it is essential to the progress of aviation as well as to the progress of community development.

Failure to exercise prompt federal control over aircraft noise can only result in:

increased social disorders in communities near airports;

increased inability to find suitable new airport sites and expand old ones to accommodate the burgeoning growth of air travel;

increased pressure by local groups for banning flight operations during specified hours of the day on particular runways, at specified noise levels, and, perhaps, at particular airports, with the consequent chaotic effect on the air transportation system;

increased inability by airport planners to accurately predict the future land requirements for airport expansion and new airport developments;

increased capital requirements for expansion of airports to cope with aircraft noise;

increased litigation by property owners over the alleged damage to their property values; and

increased pollution of the environment in which man must live.

Mr. Chairman, we respectfully urge this Subcommittee and the Senate Committee on Commerce to approve H.R. 3400 and report it to the full Senate as soon as possible.

Thank you, Mr. Chairman.

Senator MONRONEY. Thank you very much, Mr. Burnard, for your very comprehensive statement.

I recognize the vast amount of protest from the John F. Kennedy area where a heavy penalty of noise suppression has resulted in hundreds of thousands of passengers waiting on the taxiways to take off because only one runway can be used, and the congestion you have at La Guardia. Have airport operators ever considered the fact that we should stop operating in the gay nineties and the early 1900's when it was necessary to go to a port to go abroad? We are living with this old-fashioned theory that an airplane must take off from a port center. Isn't it possible to diffuse the incoming and outgoing overseas traffic to other, more desirable locations where entry over the water would eliminate a great deal of the noise factor that now not only snarls the entire air traffic control system on the eastern seaboard but also makes it impossible to use the modern aircraft at its maximum? In other words, a plane that could fly the ocean in 6 hours take 8 hours to fly the ocean because it waits 2 hours on the taxiway for clearance.

If this noise problem is to be abated, I think we should expect the airport operators, and particularly the airlines, to seek areas of noise abatement as well as thrusting it onto the Government to do the entire thing. I'd like to have your comments on that.

Mr. BURNARD. I would be happy to comment, Mr. Chairman. I think we are both privileged to be living through a very dramatic era in aviation. Historically the manufacturers of aircraft as well as the operators of them, the airlines, have sought to get the longest possible range with the greatest degree of economic feasibility that they could. For many years the object was to build an airplane that could in fact fly the North Atlantic, both directions, nonstop. The same situation was true on the west coast over the Pacific. The technology of the aircraft now does make it possible to fly intercontinentally from inland cities as well as from coastal cities.

One very strong example of this, of course, is the amount of service out of Chicago to Europe, and flights from the west coast of the United States to Europe over the pole.

These things are taking place, and there are a great many airport operators, particularly in the midpart of the country, who are eagerly pursuing service to intercontinental points from these inland cities.

Counteracting the benefits that can be gained, however, from the diversion or diffusion of originating and terminating points is the fact that we are in a business which has had a growth averaging on the order of 15 percent a year since the end of World War II. The sheer volume of operations probably increases faster than the diffusion can take place on originating and terminating points; and that is just one of the facts of the business we are living with.

Senator MONRONEY. It seems that one quick way to reduce the noise nuisance by half is to cut the number of flights by half, and to transfer them to places that have easy access.

I would have in mind Atlantic City, for example, as a central debarkation point for the area that is now served by John F. Kennedy: and I think of such places as Miami, Fla., which has easy access to the water without going over well-populated areas, or airports located far enough out where it would be no nuisance.

While I am not downgrading the need for noise evaluation, I am saying that there are other methods in most of the places where the loud complaints come against the airport operators—I would include Washington National as one of those. The problem is soluble without any adjustment to power-setting by simply using Dulles or Friendship. This is possible on the Pacific coast. I don't think you get much noise nuisance at San Francisco because of the bay location of that airport. Los Angeles has a problem.

But these things, I think, are soluble. We don't wish to get ourselves pushed into a new area of regulation: contrary to what people think, Congress is not looking for more duties in the Federal Government, but less duties where possible.

I ask you if there is anything in your complete statement—which I am sorry I didn't have time to read during the recess—that would lead you to advocate Federal preemption of noise responsibilities in assuming the liability, financial or otherwise, on damage claims arising if we modify these planes or cause them to be modified and they are not as quiet as we had hoped they would be?

Mr. BURNARD. I think you have raised two points? Let me comment on the first one.

I know the Civil Aeronautics Board has a policy today which was enunciated by Chairman Murphy when he was before your committee last August, and I am sure is being followed by Chairman Crooker today, of changing the route service patterns wherever it is feasible to avoid the principal congested airports by putting service into other places.

On your second point, with respect to preemption, the DOT has testified both in the House and here this morning that they see no change in the respective roles of liability by virtue of this legislation. It is legislation which in principle is no different, so far as we can see, from legislation that exists today, for instance, with respect to safety.

When the Federal Government entered the safety field, obviously there were some risks that the Government might be taking. However, both in the safety field and in the noise field, so far as we can see, the Government can limit its potential liability by the degree of action which it takes. And although the Secretary this morning said that he didn't know the precise way that they are going to carry it out, he said that the rules and regulations would be formulated, taking all of the factors into account at the time of the formulation. The degree to which he exercises control, it seems to us, will be the degree to which the liability of the Federal Government is controlled.

Senator MONRONEY. But, representing the Airport Operators Council, you would not advocate Federal liability for alleged claims of nearby residents, or by people in the vicinity of the airport?

Mr. BURNARD. That depends to a large degree, Mr. Chairman, on the amount of control exercised by the Federal Government. If in fact the DOT-FAA does not exercise control to the extent of adequately limiting liability either to themselves or to ourselves, then we may wish to seek some further help. But to date, at least, we have been encouraged and are relying upon the exercise by the DOT-FAA of the authority which this legislation contains to control the problem to the degree that financial liability should be a very minor part of the total problem for the future.

Senator MONRONEY. Your position is that our principal function would not be in the day-to-day administration of the noise level around certain airports, but would be the type certificates that we would issue, that is, meeting certain standards of the commission or board in reducing, to the fullest extent compatible to safety, the noise levels of the aircraft flying into these airports?

Mr. BURNARD. I would modify your statement, Senator, to this extent: That we view the problem as being one that requires more action than mere type certification of the new aircraft. That is certainly one, and the most important single one for future aircraft.

But concurrent with that authority and the exercise thereof is the application of the authority to the airworthiness certificates which are also issued to the aircraft, and to the operating certificates which are issued to the airlines which are operating the aircraft.

I think Mr. Tipton pointed out this morning that in the application of safety regulations, there is not only a safety type certificate issued to the new aircraft, but there are also operating rules and certificates applicable to the operation of the aircraft.

And in the safety field, just by way of illustration, the aircraft manufacturer produces an aircraft which the FAA says is capable of being operated safely; but the operating certificate issued to the air carrier requires that the airline operator of that aircraft operate it within the safety limits prescribed in the type certificate, first of all; but then in addition, subject to any conditions and restrictions which the FAA finds necessary to impose for certain safety reasons.

We can visualize noise regulations being applied in the same way.

Senator MONRONEY. Although this is a different matter than air safety, I am sure we protest the overseating of certain types of aircraft. We expect certain widths of aisles, certain escapes in the event of a crash. That all adds to the field of air safety. We are getting into a field other than air safety which has to do with the tranquility of one's life. We have to live adjacent to airports, and for that reason I think we would have to accept a double standard; one, the safety—which I think must always have primacy; and second, the elimination of the discomfiture of excessive jet noise.

As I understand it, you favor type certificates to the manufacturer, but you would also like to have a retrofit, similar to the fan jet, in relation to more silent operation of the planes that are now existing. Is that correct?

Mr. BURNARD. Yes, that is correct in principle, Mr. Chairman. We are convinced, based upon our work with the White House Office of Science and Technology Noise Abatement group, and later when it was transferred to the DOT, plus our experience in working with the manufacturers and the airlines and NASA, FAA, and so forth, that it is well within the state of the art today to obtain significant reductions in the amount of noise created by today's aircraft. And it is also well known in the state of the art, according to these experts, to achieve even greater reductions with newly designed engines for the future.

I think it was Secretary Boyd who mentioned this morning that the acoustical insulation of the present aircraft can achieve a fairly significant reduction. The net effect of what he said was that it would reduce annoyance to the point on the ground by about 50 percent. The figures we have ——

Senator MONRONEY. This is in the new engines. I had the same briefing that he had and at the same time. It is an engine development. The other was a possibility of sound reduction in addition to this. The 50 percent of what the ear hears was a definite statement of the objectives of one of the principal engine manufacturers.

Mr. BURNARD. But this can be achieved, as we understand it, by the technicians through modifications to present aircraft. We can get from 7 to 11 EPNDB reduction in the takeoff and landing noise from present aircraft with this sound insulation method.

Now, in addition to that method there is also the technological capability of developing what are known as scaled-down engines of some of the larger ones that are either now in production or will be in the not too distant future. For instance, the Boeing 747, which grosses out on the order of 700,000 pounds, according to the manufacturer will make less noise to people on the ground than will the 707–100, for instance, which was the first airplane—which is less than

250,000 pounds. And this is because the technology of developing the engines has made it possible to reduce the amount of noise which the higher-powered engines will produce, bring it down to the level, and below the levels, as a matter of fact, of today's aircraft.

So one of the possibilities which the technicians have indicated is well within the realm of possibility is to use a scaled-down version of some of these huge engines that will be used in the 747 or C–5A to incorporate the noise reduction characteristics in these smaller engines and put them on today's airplanes.

Senator MONRONEY. Am I correct? It seems to me that the engines to be used in the 747's will be quite similar to the engines used by Douglass, at least, on the DC–10, and by those American-made engines on the Lockheed 1011. If they will power the 747 or the C–5A with a series of four, a series of two would not only give you the 10-percent reduction, or the 50-percent audible reduction that you would get, but also would you only have 50 percent of the powerplant on these new jets in the future——

Mr. BURNARD. Well, Senator, I think the manufacturers that you mentioned are each using different kinds of engines. Lockheed, I believe, is planning to use a Rolls Royce——

Senator MONRONEY. I think it is a mixture. Some will be Rolls Royce; some will be American-made.

Mr. BURNARD. But there is one characteristic that is common among the engines for the aircraft that you referred to. They are all going to be much higher powered engines than today's. But they will all—according to the manufacturer's design standards—produce less noise to people on the ground than today's engines do, of a much smaller size.

Senator MONRONEY. This is correct; and as to that, the certification would be a matter of ordinary standard operating procedure. Concerning our present DC–8's and 707's, the retrofitting of those with new engines would probably cause complications to the aerodynamics of the plane—weight, wing stress, things of that kind. Perhaps we would be able to find some modification in the insulation of these engines into the plane, and in other ways, such as exhaust control. You would have less perceivable sound on the ground than you would in their present configuration.

I think what we are talking about is a simpler—important but simpler—problem in the new ones and the new certifications and their noise acceptability rather than the refitting that we will have to have on the existing fleet, which is of considerable size and has a great many years of life before it. The extent and the cost of this retrofit is something with which I think we must be concerned. Some planes might not have an acceptability or an adapability to the retrofit. In that case, would you not feel that it is up to the Airport Operators Council, and their individual authorities that they have in their own airports, to say, "No, we do not wish to accept this plane because, measured on the sound decibels of the FAA standards, this does not fit an airport of this category." I am talking about the Washington National-La Guardia type of airport. I include Los Angeles.

Mr. BURNARD. Well, the objectives that we are seeking—and we think that this legislation will accomplish it—is to permit, authorize,

and as a matter of fact, direct the DOT–FAA to promulgate such rules and regultions as will alleviate the problem to the extent of making it acceptable.

The legislation does incorporate the factors that you mentioned that will have to be taken into account by the DOT–FAA before they promulgate the regulations. And as airport operators, we believe that if that authority is carried out—as we understand that it can be and is intended to be—we think that the aviation industry and the whole air transportation system will be advanced greatly, in that one of the restraints, one of the serious restraints to aviation growth today—which is aircraft noise—will be removed by this exercise of control.

Today it is not possible for airport operators to plan with any degree of accuracy for the expansion of existing airports or the construction of new ones with respect to what degree and amount and volume of noise will have to be taken into account. And this legislation will clarify that, as the Secretary pointed out this morning.

Senator MONRONEY. I am still concerned over the fact that there are many airport systems that could use—without challenge or without complaint, and perhaps with slightly additional efficiency and horsepower, and thus, safety—unmuffled sounds below the present level at selected airports, we will say, in transcontinental or transatlantic service, transpacific service. Where those airports exist, would you feel that the airline operators wishing to operate a certain portion of their fleet over those routes would be justified in not having to meet these standards on a retrofit?

I agree with you that on the new ones we should insist. The state of the art is getting so that we can insist on that type of an engine. But with the vast number of planes in the fleet, I think the operators can choose to fly them on those routes where noise is not a problem—Dulles, for example—for transcontinental, transoceanic operation—I used Miami earlier or perhaps some of the west coast airports, such as Los Angeles. Otherwise I think we should leave them with an option; two categories in which the new levels would be required, and other categories where they would not be required because it is not the noise en route that bothers anybody. That is not the national problem—except on the supersonic. It is the national problem on the landing and takeoff.

Mr. BURNARD. Senator, our whole air transportation system is made up of a vast variety of airports in terms of noise sensitivity. The airline part of the system is also made up of very long and very varied routes, so that it is almost impossible—it is impossible at the present time—to think in terms of an airline using a fleet of airplanes at airports, all of which have no noise sensitivity connected with them. In other words, when Pan Am leaves New York, for instance, bound for Europe, and probably around the world, or at least halfway around the world before it turns back it is going to go into a good many airports, many of which will have greater sensitivity than others. And it is true——

Senator MONRONEY. London, England prohibits landings and takeoffs between the hours of 10 at night or 6 or 7 in the morning, doesn't it?

Mr. BURNARD. They have noise restrictions in the operating regulations with respect to both hours and with respect to volume. And the last I knew, the air carriers were required to divide up among themselves their schedules so that they didn't exceed the volume limitations as well as to not infringe upon the hours-of-the-day limitations.

That particular type of regulation has become inevitable for lack of control over the noise characteristics of the aircraft when they are constructed, and over the characteristics of noise in connection with their operation. And I am sure the airlines would like to see a system developed, and particularly under this legislation, which would give them the greatest amount of flexibility and the greatest amount of freedom in their operation. And we would, too, to the extent that the control is adequate to assure an acceptable level of noise at each of the airports into which a particular airplane and/or a particular fleet of airplanes flies.

Senator MONRONEY. I am still thinking about the 2-year transition from the passage of the legislation to the date on which they are to be installed in these new planes, and how long it is going to take to work your way out of this. I certainly think the priorities ought to go to the places where the noise from the ground is almost equal to the noise from the air, or where there are airports unfortunately located near sensitive communities, or other airports which offer no problem in noise abatement at all.

You are going to have a problem if you are talking about rolling back to existing aircraft.

Mr. BURNARD. Senator, you yourself have pointed out very effectively today the reluctance of the carriers to use some airports, and you have named some in the local Washington area. I think the CAB, as I said earlier, has enunciated a policy to encourage the use of other airports not only in this area but in other parts of the country; and to that extent, there will be some alleviation of the problem. But it isn't going to solve it completely.

Senator MONRONEY. What I am saying is that if you have a due date for the retrofit, you will take half the airports where no noise problem exists. You try to compress your time into the retrofitting of these planes. I think you find a more orderly transition if you start out with category 1 and category 2, and maybe go up to category 3, so you will have the elements that can be quickly and cheaply done in the first stage of your transition; and then move up to the full modification of the last fleets as rapidly as (*a*) technology permits; and (*b*) the capability of the overhaul and maintenance departments to install whatever new equipment you have to reduce the decibels of noise.

Mr. BURNARD. These are the kind of factors that I understood Secretary Boyd to say this morning that his agency would be taking into account.

Senator MONRONEY. But if you don't get it done the day after tomorrow, the people in Georgetown are going to be ringing the phone off the hook.

Mr. BURNARD. I think the important thing is that the people who have been making the phones ring have, up until the last week or two, had little hope of any relief by virtue of Federal control over the situation. Now that they can be encouraged to the extent that at

least the first step is being taken, they probably won't be quite as insistent as they would have been had this step not been taken. And it is, then, a matter of course for the DOT–FAA to go through the regulatory hearings and proceedings, notice of proposed rulemaking, et cetra; and as long as people suffiering from this problem can see progress, it is going to be a lot easier to bear them if they see their views turned down and no progress being made.

That, we think, is one of the most important aspects of this piece of legislation.

Senator MONRONEY. Do you think that the Federal Government, in this noise suppression, would be justified in overriding the wishes of the local airport management or the local airport governing bodies to refuse, as included in the Federal Aviation Act, on which we will start hearings on tomorrow, to give Federal matching grants to airports that are not located outside of, shall we say, the sound-noise-conscious areas?

Mr. BURNARD. Well, that policy has been in effect for several years, as you know, Senator, because of amendments to the Federal Airport Act that this committe and the Senate approved several years ago.

One of the key missing features of this exercise is the lack of knowledge on the part of either the FAA or the airport operator as to the amount of noise that is going to be permitted for the future. And it has been a guessing game which has been impossible to guess accurately on.

Senator MONRONEY. Well, of course, one of the reasons for that is the failure of the airport management, or the boards or civic bodies that control them, to determine airport locations insulated from the noise or to insultate themselves by distance from the centers of complaints about noise, and who have also failed to secure proper zoning for the use of adjacent land for industrial sites or other nonsensitive installations other than residential property. It is just tragic to see the growing encroachment on Dulles today. It was purposefully built out in the country.

General Quesada, as Administrator, wisely decided even to restrict the highway leading to the airport to suburban traffic so that one could get to and from the airport, after reaching the limited access highway, as fast as possible, in spite of the inadequacies of surface transportation. But the new additions, the rolling sprawl of the metropolitan area, are going to bring about an airport noise problem eventually at Dulles. It is beginning to encroach on Friendship, and they have wisely expanded industry around the airport. As the C–5A gets here, it is going to be a better and better industrial location.

Mr. BURNARD. Senator, from a noise standpoint, airports can be, I suppose, classed as two types: One, the existing airports where remedial action is the only course open; and the second, new airports are being planned where preventive measures may be taken.

As you noted, at Dulles the Federal Government took what they assumed to be adequate preventive measures so that this would not be a problem out there. However, they ran into the same problem that exists throughout this country, and it exists because we are a democracy—and thank God we are a democracy—but it exists because one

form of government—the Federal Government in the case of Dulles—created the airport. But the land surrounding the airport is under the jurisdiction of two different counties and, of course, a State. So the difficulty is to persuade the various jurisdictions, with highly differing degrees of interest in the subject, to do the things which aviation people would like to see done.

Aviation people are just one of many elements of society, and people wishing to develop land and communities for other purposes obviously have their ways of expressing their desires and intentions, and the trick is to find a compromise; and that is what we emphasized in our statement: to find this compromise between appropriate community development and appropriate aviation development, because they do come into conflict at certain places at certain times.

Senator MONRONEY. One other question: Shouldn't a person other than FAA certificate holders, perhaps representatives of the public, be given the right to take part in the standard-making process, and/or be given the right to appeal any administrative decision?

Mr. BURNARD. With respect to the first part of the question, Senator, under the Administrative Procedure Act, anyone interested in the rulemaking that is proposed by an administrative agency is welcome, invited, and has a perfect right to state his views and his case. The administrative agency, of course, has discretion as to what weight it will give the views of various interested people; and if there are some elements of the public that have stated their views and don't think that the Administrator or the Secretary has properly taken them into account, presumably they can take him to court for abusing his discretionary privileges.

This is true not only under these circumstances of aircraft noise legislation and control, but would be true, of course, with safety and any other regulation that may be proposed.

I guess I have really answered the second part on the appeal, too. The only appeal that I see, without having studied the situation, is that such people, members of the public that didn't like the Administrator's or the Secretary's decision, as I say, could probably take him to court for abuse of his discretion.

Senator MONRONEY. You think we should not establish a board of industry, airport operators, airline operators, plane manufacturers, engine manufacturers, and members of the public to make the final decision? That would still be left in the hands of the Secretary.

Mr. BURNARD. We haven't seriously considered that possible course of action. As a matter of fact, in your conversations here today, it is the first time I have heard it raised in any sort of a serious way. But just offhand, I don't see any real differences between the way noise regulations would be promulgated and the way safety regulations would be promulgated. There is no board that is set up to help with the promulgation of safety regulations. Everybody and anybody who is interested in them has an opportunity to be heard. They can file a written statement. They can ask for an oral hearing; and I would think the same would be applicable in this case. If it didn't work out after a period of time, why, perhaps that would be time enough to consider setting up a board. But at the moment, I would prefer to see it go through as it is, and subject to all of the safeguards that presently exist with respect to rulemaking.

Senator MONRONEY. I don't think I need to ask you this question, but I will ask it for purposes of the record. In the choice between the ultimate best level, or lowest level, of noise, and the ultimate highest degree of safety, safety would be your prime consideration before noise. Is that correct?

Mr. BURNARD. It has to be, Senator. We have said so in our statement. Obviously, nobody in the business is going to be jeopardizing lives in contrast to that of noise abatement.

However, that shouldn't for a moment serve as an excuse for not doing anything about noise abatement because we are absolutely convinced that it is technologically possible and economically feasible to have both the highest level of safety and the highest level of noise abatement.

Senator MONRONEY. I don't know my engine theory as well as I should, but would a high-horsepower or thrust-power engine running at lower capacity make as much noise as a thrust of lesser capacity running at high speed?

What I am trying to say is, is it controllable?

Mr. BURNARD. I am not a technician in this area, and I can't be sure to give you a technically sound answer. But based upon the development of aircraft engines for the larger types of aircraft such as the 747 and the DC–10, it appears to be perfectly possible, from a technological standpoint, to increase the thrust two to three times without increasing the amount of noise. In fact, it can be reduced to the level of engines with much less thrust.

Now, whether or not those large high-powered engines will operate at lower noise when operated at less thrust, I can't be absolutely sure, but I would suspect that it would be because there is an additional tolerance of performance in the higher thrust engines which, if they are not used at their maximum output of thrust, can be used at a lower noise level.

Senator MONRONEY. I don't know my aerodynamics and physics as well as I should, but you mentioned the 747 and the larger jets coming on, produce greater power and make less noise than their earlier, lighter predecessors. Is this a correct statement?

Mr. BURNARD. Yes, that is a correct statement, Senator, as to their design criteria.

Senator MONRONEY. There is no simple rule of thumb of weight plus mass equals power; the power must equal weight plus mass. They have no absolute relationship to one another?

Mr. BURNARD. No, sir; so far as I know, there is not. There were statements along that line back several years ago, 5 to 10 years ago, but the development of both engines and aircraft since then, and the current developments, completely repudiate that.

Senator MONRONEY. Perhaps I should have asked this of ATA or the engine manufacturers, if they had been here.

Is there any way that you can dye the color of the jet exhaust to look like clear air?

Mr. BURNARD. I am not qualified to answer that question, Mr. Chairman. I have heard there is, however.

Senator MONRONEY. I have a sneaking suspicion that some of the noise level criticism is the result of seeing the long contrails of black

smoke resulting as planes take off and climb out, some making more smoke than the old Pennsylvania when it burned soft coal going down its main line; and everyone speaks of it as being great air pollution. This one probably is in the offing if we don't find some way to clear it up. I am advised by certain experts in that field that there is less pollution in the black smoke than there is in the colorless carbon monoxide coming from the exhausts of the automobiles on the ground.

Mr. BURNARD. I understand, Senator, that there are some industry committees working on that subject. And how far they have gotten, I can't tell you at the moment.

Senator MONRONEY. It is quite an irritating thing.

Mr. BURNARD. Yes, it is.

Senator MONRONEY. I think the eye sees what the ear didn't hear, but the ear thinks it is hearing jet noise when the eye sees the long contrails as they climb out on a nice clear day.

You have been very helpful to us, as you always are, Mr. Burnard, and hopefully you will be before us tomorrow with some more good ideas, because time is fleeting. And safety still being the primary factor, I think the safety factors will be cut rather thin on the lack of adequate spaces to put these big birds down and to get them off in the air safely again.

Mr. BURNARD. Thank you very much, Senator. We do appreciate your taking the time out of your busy schedule to have these hearings, and we hope the bill will move along.

Senator MONRONEY. Are there any other witnesses?

(No response.)

We will close the hearings and leave the record open for 1 week for further statements. We will have an executive session shortly and report out the bill.

(Whereupon, at 3:20 p.m., the subcommittee was adjourned, subject to the call of the Chair.)

ADDITIONAL LETTERS AND STATEMENTS

HON. SEYMOUR HALPERN, A U.S. REPRESENTATIVE FROM THE STATE OF NEW YORK

Mr. Chairman and Members of the Committee: I welcome this opportunity to present my views and express my enthusiastic support on H.R. 3400 now before your Committee. I commend you, Mr. Chairman, and your committee for holding these hearings in order to give the opportunity for the airing of further views on this important subject that affects so many millions of our population.

There is no question in my mind, but that H.R. 3400 is long overdue and vitally needed. Its objectives have been long-sought goals of many of us in the Congress, particularly those of us who represent areas that are plagued by the deafening, nerve-shattering, and often physically hazardous din of airplane noise. This legislation has been one of my staunchest objectives ever since I came to the House in 1959 and introduced a series of bills aimed at this problem, including one to put the responsibility of airplane noise in the hands of the F.A.A. I am privileged to have sponsored legislation identical to H.R. 3400, which was introduced by the able and distinguished Chairman of the Interstate and Foreign Commerce Committee.

The bill fills a legislative vacuum in airplane noise abatement, by authorizing, once and for all, the Administrator of the F.A.A. with the responsibility for setting standards. This is what we've been fighting for all these years. We hail the overwhelming acceptance of this measure, as is reflected in the unanimous House vote. I want to point up that in itself the authorization of established of standards for noise levels is a great step forward.

But H.R. 3400 is not a panacea and may not alone be the answer. As I see it, the need now will be for the fullest possible implementation.

Unfortunately, this is hindered by a few ambiguous clauses of inadequate structural organization. For example, the bill provides that the Administrator of the Federal Aviation Agency shall set standards for the "control and abatement of aircraft noise and sonic boom," based on R.D.T. & E. conducted "pursuant to this Act and the Department of Transportation Act."

However, there is no specific allocation made in this Act, the F.A.A. Act, for research and development in noise abatement. The R. & D. clause in it (Sec. 312(c)) provides for research and development only "to meet the need for safe and efficient navigation." And the Department of Transportation Act, empowers the *Secretary of the Department* not the Administrator of the Federal Aviation Agency, to undertake research and development in the area of noise abatement (Sec. 4(a)).

Where, then, does the Administrator get authorization for the R. & D. that is so essential to the success of any noise abatement program?

There are, in fact, at least two areas where research and development is at present completely unsuited to permitting the full implementation of the legal provisions of the bill. First, the Administrator is required to make certain that the standards he sets are "economically reasonable." Yet to the present date, no serious cost—effectiveness study, even of the techniques of which we are presently capable, has been made. Certainly, the airlines will not undertake the investigation. To make a bad matter worse, not only is the Administrator *presently* unable to recommend the most effective noise-dampening methods; he is also unable to guarantee fulfillment of the opening phrase of H.R. 3400, the call for ". . . future relief and protection to the public . . ." For example, in a report issued by the F.A.A.'s office of Noise Abatement, dated June 17–21, 1968, and entitled, "The Federal Aviation Administration and Aircraft Noise Control," one of the tasks listed as necessary for accomplishing noise abatement is to "Initiate additional R. & D. efforts to eliminate uncertainties in predicting aircraft noise from preliminary design stages to type certification."

In other words, at its present level of R. & D. the F.A.A. can't accurately predict on the basis of drawing board information, the noise levels which will

occur in final operational models. How, then can it prescribe standards for what was a primary aim of this bill, noise abatement for future aircraft?

These critical deficiencies in important areas of R. & D. point up one of the basic, underlying obstacles to the success of any noise abatement program. This is the lack of coordination between the authorization for research, which takes place almost exclusively in the Department of Transportation, and the power to establish standards for noise abatement, which H.R. 3400 entrusts with the F.A.A. Administrator.

In fact, the Department of Transportation and the F.A.A. run separate offices of Noise Abatement. And the F.A.A., which will be setting standards, has run its office on the shoestring budget of $344,700 for fiscal year 1969.

In view of these facts, I urge you, Mr. Chairman, and distinguished members of the Committee, to consider strengthening the long awaited provisions of H.R. 3400, such as to assure the bill's speedy and full implementation, and towards this end, I submit the following proposals:

1. That the Administrator of the F.A.A. be empowered specifically to conduct a cost-effectiveness study of our present technical capability in noise abatement;

2. That he be empowered to conduct an immediate and intense program to improve his ability to predict aircraft noise intensity on the basis of preliminary design;

3. That to ensure a greater coordination of research and the power to establish standards, the Office of Noise Abatement currently administered by the Department of Transportation be incorporated into the FAA's Office of Noise Abatement and be operated by the Administrator of the FAA. This would ensure that the research and development that it does is directly pertinent to the problems of establishing standards.

The acceptance of these proposals, gentlemen, will allow Congress to fully vindicate its responsibility to the safety and welfare of a concerned public, and will guarantee the full and efficient enactment of the standards intended by the Noise Abatement bill that the House so overwhelmingly accepted.

STATEMENT OF HON. HERBERT TENZER, A U.S. REPRESENTATIVE FROM THE STATE OF NEW YORK

Mr. Chairman, I appreciate this opportunity to appear before the Members of this Subcommittee to testify in support of aircraft noise abatement legislation.

I support H.R. 3400 as reported by the House Interstate and Foreign Commerce Committee and as passed by the House on June 10, 1968 by a vote of 312 to 0.

As a resident of Lawrence, New York—in the shadow of Kennedy Airport—I have experienced firsthand the menace of jet noise. This is a problem which disrupts the daily lives of millions of Americans who live near our Nation's airports and which continues to plague them in growing numbers as smaller jet planes begin to operate at new airfields.

Since I came to the Congress in January 1965 I have called for effective Federal legislation to reduce and control jet noise. I stressed that jet noise was a national problem requiring Federal regulation.

At first I was told I was "beating a dead horse"—that nothing could be done to solve the noise problem. In August 1965 I asked President Johnson to appoint a Commission to investigate the problem and recommend legislation. In February 1966 in his Transportation Message to Congress, the President recognized jet noise as a national problem and appointed a White House Task Force "to frame an action program to attack this problem."

That Task Force recommended legislative action which has been embodied in H.R. 3400, as refined by the House Commerce Committee. Under this bill, the Administrator of the FAA, in consulation with the Secretary of Transportation, is authorized and required to establish minimum aircraft noise standards—and sonic boom standards—to be used in issuing or revoking flight certificates.

This is the first and a most important step in bringing relief to those who live in airport communities across this country. Research activities—in private industry and in Government—have discovered new techniques to build quieter jet engines. At the present time, there is no authority to require the use of these quieter engines.

I have been convinced for some time now that we already have the technical skills to produce a quieter jet engine, but because of the cost involved and the lack of commercial or economic benefit to the aviation industry, we have failed to do so.

H.R. 3400 will provide the FAA with the necessary authority to protect the interests of persons and property on the ground from excessive and unnecessary aircraft noise and sonic booms.

As amended and passed by the House, the legislation makes it quite clear that any and all regulations issued pursuant to this authority must be consistent with the highest degree of air safety. The proponents of aircraft noise abatement legislation would want it no other way.

I believe it is also important to note the importance of this new authority as it relates to supersonic aircraft and the problem of sonic boom.

As of this date I have not received an answer to my question "What would happen if a sonic boom struck a ship at sea?" I have raised this and several other questions in my statements calling for a postponement of the supersonic transport until we learn more about the control of sonic boom.

H.R. 3400 gives the Administrator of the FAA authority to apply minimum standards to all aircraft, including supersonic aircraft—domestic or foreign. Should an SST seek a United States flight certificate to land at a U.S. airport and should that aircraft not be able to meet the minimum noise or sonic boom standards set by the Administrator, the FAA could refuse to issue the certificate under this legislation.

This is minimum protection for the American public from the damage which could be caused by sonic booms.

Mr. Chairman, H.R. 3400 as amended, has been endorsed by the Airport Operators Council International and its approval by the United States Senate is urgently needed.

I thank the Members of the Subcommittee for considering these arguments and I respectfully urge you to approve this bill for Senate action as quickly as possible.

THE SECRETARY OF TRANSPORTATION,
Washington, D.C., June 22, 1968.

Hon. A. S. MIKE MONRONEY,
Chairman, Subcommittee on Aviation, Committee on Commerce, U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: At the June 17 hearing before your Committee on H.R. 3400, a bill to authorize noise abatement regulation, two questions were asked which I agreed to answer more fully for the record.

The first question was whether it would be feasible to require as a condition precedent to a Federal airport grant that a community conform its zoning around the airport to make the land use more compatible with the existence of the airport. There is presently a requirement in the Federal Airport Act (section 11(4)) which requires an airport sponsor to give assurances to the Secretary 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 airport operations including landing and take-off of aircraft." A provision such as this is quite workable in the case of new airports where the surrounding land has not been developed. It becomes progressively more difficult, of course, as land development proceeds. In the case of an extended runway, the use of which might affect fully developed areas, zoning is not a very useful tool. The only land use solution in those circumstances would be a redevelopment program of some kind.

Another aspect of the zoning problem which presents difficulty is the conflict of jurisdictions. The jurisdiction operating the airport may not be the jurisdiction with authority to zone land affected by the airport. As I indicated in my testimony in support of the Administration's airport bill, Senate 3645, a Federal-state-local cooperative planning process, as recommended by that bill, is necessary to solve the problems of airport location and compatibility. In the long run, the states may have to assume airport zoning responsibility or establish regional forms of government capable of coping with the multiple jurisdiction problem.

Given the nature of Federal-state responsibilities, the cooperative planning effort proposed in Senate 3645 (using all forms of Federal assistance as leverage to assure that plans are carried out), plus a zoning requirement similar to that in section 11(4) which we would impose administratively, is about as far as we could go in encouraging compatible land use.

The second question raised, was whether H.R. 3400 would, to any degree, preempt state and local government regulation of aircraft noise and sonic boom. The courts have held that the Federal Government presently preempts the field of noise regulation insofar as it involves controlling the flight of aircraft. Local noise control legislation limiting the permissible noise level of all overflying aircraft has recently been struck down because it conflicted with Federal regulation of air traffic. *American Airlines* v. *Town of Hampstead*, 272 F. Supp. 226 (U.S.D.C. E.D.N.Y., 1966). The Court said, at 231, "The legislation operates in an area committed to federal care, and noise limiting rules operating as do those of the ordinance must come from a federal source." H.R. 3400 would merely expand the Federal Government's role in a field already preempted. It would not change this preemption. State and local governments will remain unable to use their police powers to control aircraft noise by regulating the flight of aircraft.

However, the proposed legislation will not affect the rights of a state or local public agency, as the proprietor of an airport, from issuing regulations or establishing requirements as to the permissible level of noise which can be created by aircraft using the airport. Airport owners acting as proprietors can presently deny the use of their airports to aircraft on the basis of noise considerations so long as such exclusion is non-discriminatory.

Just as an airport owner is responsible for deciding how long the runways will be, so is the owner responsible for obtaining noise easements necessary to permit the landing and takeoff of the aircraft. The Federal Government is in no position to require an airport to accept service by larger aircraft and, for that purpose, to obtain longer runways. Likewise, the Federal Government is in no position to require an airport to accept service by noisier aircraft, and for that purpose to obtain additional noise easements. The issue is the service desired by the airport owner and the steps it is willing to take to obtain the service. In dealing with this issue, the Federal Government should not substitute its judgment for that of the states or elements of local government who, for the most part, own and operate our Nation's airports. The proposed legislation is not designed to do this and will not prevent airport proprietors from excluding any aircraft on the basis of noise considerations.

Sonic booms are made by aircraft flying in excess of the speed of sound. Since the flight of aircraft has been preempted by the Federal Government, state and local governments could exercise no control over sonic booms.

Enclosed is a corrected copy of the transcript of the June 17 hearing.

Sincerely,

ALAN S. BOYD.

MASSACHUSETTS PORT AUTHORITY,
Boston, Mass., June 17, 1968.

HON. A. S. MIKE MONRONEY,
U. S. Senate,
Chairman, Aviation Subcommittee,
Committee on Commerce, Washington, D.C.

DEAR CHAIRMAN MONRONEY: The Massachusetts Port Authority wishes to present respectfully its support of H.R. 3400 which defines the role of the Federal Government in the control and abatement of aircraft noise.

This Bill will permit the Federal Government to establish standards for control of noise at the source and provide the basis for a meaningful national aircraft noise abatement program. From these standards and their reasonable application to air frame and engine manufacturers, in the process of aircraft certification, we believe can be evolved objectives for noise control from all aspects. Development of realistic composite noise ratio curves as an adjunct of this program for instance would provide criteria for compatible land use in the vicinity of airports.

With the cooperation of the Federal Aviation Administration, airlines and pilots operational procedures have been developed at Boston-Logan International

Airport to minimize aircraft noise irritation to the maximum extent consistent with safe operations. Any significant further improvements must come first from aircraft design and, secondly, compatible land use. Passage of H.R. 3400 is an essential step in accomplishing both. Therefore we ask that you record the enthusiastic endorsement of the Massachusetts Port Authority for this Bill.

Very truly yours,

EDWARD J. KING,
Executive Director.

[Telegram]

HEMPSTEAD, N.Y., *June 19, 1968.*

Senator A. S. MIKE MONRONEY,
Senate Commerce Committee,
U.S. Senate,
Washington, D.C.:

Passage by Senate of administration jet aircraft noise control bill is vital to survival of metropolitan areas in proximity to major airports. I strenuously urge committee to report our bill in its present form with revision mandating sonic boom controls. I also urge retention despite pressures from commercial sector requiring retrofitting of existing engines with effective noise muffling devices.

RALPH G. CASO,
Chairman, Town Village Aircraft Safety and Noise Abatement Committee, Presiding Supervisor, Town of Hempstead, Vice Chairman, Board of Supervisors, Nassau County, Long Island, N.Y.

NATIONAL LEAGUE OF CITIES,
Washington, D.C., June 17, 1968.

Hon. A. S. MIKE MONRONEY,
Senate Commerce Committee,
Senate Office Building, Washington, D.C.

DEAR SENATOR MONRONEY: Aircraft noise is a problem of increasing concern for cities. Noise affects city growth patterns and places heavy burdens on municipally owned airports which are required to pay the cost of acquiring land and easements beyond normal airport boundaries because of the noise problem.

Planning airports to minimize noise problems has been difficult in the past because of lack of standards for aircraft noise. We urge your support for legislation similar to H.R. 3400, recently passed by the House, which will permit the Department of Transportation to establish aircraft noise standards. This legislation will permit more orderly airport development with noise levels less offensive to the surrounding community.

The National Municipal Policy of the National League of Cities states:

"Congress should amend the Federal Aviation Act to require control and limitation of the noise characteristics of aircraft through standards and regulations governing the design, construction and operation of aircraft."

We believe that action on S. 707 and H.R. 3400 is necessary at this time so that noise problems caused by the rapid growth of jet air travel and the development of more powerful jet aircraft will be minimized.

Sincerely,

PATRICK HEALY,
Executive Director.

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.,
Washington, D.C., June 17, 1968.

Hon. A. S. MIKE MONRONEY,
Chairman, Senate Subcommittee on Aviation,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: The Aerospace Industries Association, an association of the nation's major airframe, engine and aircraft component manufacturers, endorses the view that aircraft noise level criteria can be applied in the certification process for future aircraft. Accordingly, we support in principle the broad

objectives of H.R. 3400 as reported by the House Committee on Interstate and Foreign Commerce. Nevertheless we wish to submit for your consideration certain observations and recommendations with respect to H.R. 3400.

Specifically, the amendment to the Federal Aviation Act of 1958 as proposed by H.R. 3400 could, we believe, result in the establishment of noise criteria standards based on aspirations rather than on economic reasonableness and technical practicality. Since the introduction of first generation jet aircraft, members of AIA have been spending increasing amounts of money in an effort to eliminate noise as a bothersome by-product of the jet transport. As an industry we want such improvements. The fact is, however, that gaps do exist in our knowledge with respect to such fundamental problems as the basic physical mechanism of noise generation, propagation and attenuation.

We therefore respectfully recommend that any authority granted to the Administrator of the Federal Aviation Administration to prescribe aircraft noise abatement rules and standards require that the Administrator "determine that standards are economically reasonable and technologically practicable," rather than "consider" such action as proposed by H.R. 3400.

It should also be recognized that the achievement of significant reduction in aircraft noise at the source is dependent upon development of engines and/or engine nacelles. It is doubtful, however, that engines or nacelles which fully exploit this technology will be developed in the next several years. For example, improved noise attenuating engine nacelles would probably not be available prior to 1971; new technology engines probably not prior to the mid 1970's. In either event, therefore, a significant number of the existing civil jet fleet will have reached an age where a mandatory retrofit program would have extensive economic impact.

We therefore believe that modification of H.R. 3400 to specifically exclude a requirement for retrofit of existing aircraft would be realistic, and we recommend such a change.

In addition, as a general observation, we believe that the noise problem is beyond solution simply through regulatory requirements placed on aircraft and engine manufacturers alone. The potential for full noise reduction involves a combination of techniques, i.e., technological advancement *plus* controlled use of land around airports *plus* the continued refinement of aircraft in-flight operation procedures in the vicinity of airports.

With respect to controlled use of land around airports the evidence is clear that community noise annoyances can be appreciably reduced by compatible land use in the vicinities of airports. We therefore believe that a program directed toward the creation of more compatible land usage criteria for existing and future airports would be most fruitful.

Regarding operation procedures with present day aircraft, a growing body of experience tends to indicate that limits may have been reached in operating restrictions and that little relief from noise could be gained in the immediate future when flight safety and air traffic control consequences are considered. On the other hand we believe that new generation aircraft are expected to have capabilities which with modifications in operational procedures may permit further noise reduction in the vicinity of airports.

We believe that our industry can make major improvements in this troublesome by-product of aviation's progress. Legislation substantially as proposed in H.R. 3400 and modified as suggested above would support this objective.

Yours very truly,

KARL G. HARR, Jr.

THE COMMITTEE AGAINST NATIONAL,
Washington, D.C., June 13, 1968.

Hon. A. S. MIKE MONRONEY,
Chairman, Subcommittee on Aviation, Senate Committee on Commerce, New Senate Office Building, Washington, D.C.

DEAR SENATOR MONRONEY: I have just learned today that your sub-committee has scheduled one day of hearings, Monday, June 17, 1968, on S. 707 and its companion proposal, H.R. 3400, enacted by the House of Representatives on June 10, having to do with permissible standards of noise caused by aviation operations.

This letter is in lieu of testimony which I would give to your committee, and I request that it be made a part of your record of proceeding to preserve and identify a point of view with respect to aviation operations which I trust you will agree is not to be dismissed without any sort of hearing at all; that is, the view of those whose day-by-day environment is so seriously damaged by the present failure of aviation in any of its aspects to apply reasonable standards of pollution control, both as to noise and as to engine waste.

On January 12, 1968, at the Hardy Recreation Center, 45th and Q streets, northwest, Washington, D.C., The Committee Against National, an association of persons having broad and substantial interests in the nature, composition and operating characteristics of aviation in the Washington-Baltimore area, adopted without dissent the following resolution:

Whereas pollution caused by aircraft noise and engine waste is a growing menace both nationally and in the Potomac Valley; and

Whereas the Federal Aviation Administration, the Civil Aeronautics Board, and other responsible agencies in the Executive Branch of the Federal Government have failed to exercise their obligation, or have claimed lack of authority to protect the public from such pollution: Now be it

Resolved that the Committee Against National petition the Congress to enact mandatory legislation

(1) to require one or more agencies of the Executive Branch to take prompt and effective action to abate pollution caused by aircraft noise and engine waste in this Potomac Valley region and throughout the nation.

(2) to require responsible agencies to permit and encourage full citizen participation in the establishment of permissible aircraft noise and engine waste tolerances.

(3) and to entrust the final authority to establish these permissible standards, binding on all Federal agencies, to an impartial council of environmental conservation experts entirely independent of the aviation industry or the promotion of aviation.

The circumstances which caused this resolution to be adopted, Mr. Chairman, are developed in some detail in testimony I gave, March 20, 1968, before the House Committee on Interstate and Foreign Commerce as the subcommittee thereof on transportation and aeronautics considered H.R. 3400 and related proposals.

Enumerated clause 3 of the resolution above quoted deals with the crucial provision that the permissible standards for aviation impact on the general environment be set by conservation experts in no way engaged in advancing the interests of aviation, itself, for the same reason that Congress has so wisely provided that standards of food, drugs and like matters must be set by authorities in no way engaged in the interests so regulated.

This memorandum is to urge that your sub-committee amend the proposals you are considering in keeping with the resolution of January 12, 1968, above quoted.

Sincerely,

FRANK C. WALDROP,
Chairman.

NATIONAL ASSOCIATION OF COUNTIES,
Washington, D. C., June 14, 1968.

Re H.R. 3400, aircraft noise legislation.

Senator A. S. MIKE MONRONEY,
Chairman, Aviation Subcommittee,
Senate Commerce Committee,
Washington, D.C.

DEAR SENATOR MONRONEY: Aircraft noise is a problem of increasing concern and severity to local government and one which we have concluded must be dealt with by the Federal Government. The American County Platform, the official policy statement of the National Association of Counties, very clearly spells out our position on this problem and I quote:

"The continuing expansion of jet aircraft service and the development of potentially noisier aircraft such as the supersonic transport have created a national noise problem. A problem of this magnitude cannot be solved at the local government level and is properly a national concern by virtue of the existence of

federal statutes which define airspace as being within the public domain and subject to the jurisdiction of the federal government.

"The National Association of Counties urges the enactment of federal legislation to: (1) establish criteria for levels of aircraft noise acceptable to people on the ground; (2) assure that civil transport aircraft meet such standards as a precondition for certification for airworthiness; (3) authorize the establishment of necessary rules and regulations applicable to aircraft operations in order to conform to such criteria; and (4) financially assist all public bodies which operate airports in sufficiently expanding their airports as a help in resolving the noise problem."

Accordingly, the National Association of Counties supports H.R. 3400 as passed by the House.

Unless positive action along the line of H.R. 3400 is taken the threatening financial liabilities confronting operators of airports jeopardizes our national aviation future. It is unreasonable to expect local governments to continue to accommodate to an ever increasing noise problem.

In our view, it is proper that the responsibility of controlling this problem is that of the aircraft manufacturer. Local governments are quite willing to support their fair share of our aviation needs, however, we do not feel this includes the aircraft noise problem.

We should like to thank you in advance for your consideration of our concern and ask you to make this letter a part of the hearing record.

Sincerely yours,

BERNARD F. HILLENBRAND,
Executive Director.

THE PORT OF NEW YORK AUTHORTY,
New York, N.Y., June 14, 1968.

HON. A. S. MIKE MONRONEY,
Chairman, Subcommittee on Aviation,
New Senate Office Building, Washington, D.C.

DEAR SENATOR MONRONEY: The Port of New York Authority, as operator of Kennedy International, LaGuardia and Newark Airports, supports fully H.R. 3400 and believes approval of this bill by the House of Representatives without a dissenting vote indicates the vital importance of prompt action to complete the passage of noise legislation. We are hopeful that, in the public interest, the Senate Spbcommittee on Aviation will approve H.R. 3400 as passed by the House on June 10, 1968, and that it will urge the full Commerce Committee to recommend speedy passage of this legislation by the Senate.

The problem of aircraft noise has reached critical proportions which, from all indications, the people of the metropolitan areas are not prepared to tolerate much longer. We know that some militant civic groups are planning to adopt civil disobedience tactics at airports to emphasize their demands for noise abatement. I need not detail the dangers implicit in such actions at busy metropolitan airports crowded wtih thousands of passengers, employees and visitors and with aviation equipment and volatile fuels. Prompt passage of Federal noise abatement legislation would do much to ameliorate this militant attitude.

The present situation will be intensified in the near future through the introduction of new families of aircraft, such as the 747 and the SST, and through the rapid growth of air traffic. The manufacturer apparently is already planning "stretched" versions of the 747 and SST which, based on past experience, will be noisier than the original models. In addition, the success of the smaller jets, such as the Boeing 727 and DC–9, in introducing jet service to our smaller cities is causing a proliferation of aircraft noise problems throughout the nation.

The Port Authority has been deeply concerned and involved in aircraft noise problems since 1951. Our efforts throughout the years to abate the nuisance of aircraft noise is well documented, but despite our best efforts the problem of aircraft noise in communities near our airports has become increasingly severe, resulting in rapidly deteriorating relations between the aviation industry and the community it serves. If we have learned nothing else, we have learned that the aircraft noise problem can never be solved by local government because the creation of the noise is uncontrolled. And as long as there is no control over the source of the noise—namely the engine and the aircraft,

then there can be no resolution of the problem of the amount of noise an aircraft creates over populated areas adjacent to airports.

All efforts to deal with the problem have been limited to the amelioration of neighborhood noise through operational techniques and restrictions. The fact is, however, that noise can only be controlled at the source, i.e., the airplane. It is our understanding that competent aeronautical research scientists assert that the development of an economical aircraft engine some 15 to 20 PNdb quieter is well within the state-of-the-art and could be available commercially within five years. Moreover, we understand that such an engine could be retrofitted to aircraft in the current fleet. It does not now exist because there has been no real insistence upon its development. Quieter jet aircraft hold no economic incentives for the airlines and no local governmental body representing the public interest has effective power to require the development and use of quieter jet engines and aircraft. Only the Federal government can provide that incentive by the development and promulgation of noise standards and by their application to all aircraft through the certification process. This is basically what H.R. 3400 would do.

Many leaders of the aviation industry agree to this, as I am sure you are aware. They fully recognize that the intensification and proliferation of aircraft noise constitutes the single greatest inhibitor and hazard to the growth of aviation today.

It has been suggested by some that the local government should purchase all noise-affected land and convert its use to other than residental purposes, Such a policy is impossible of fulfillment in our urban society. Airports already take 5,000 to 10,000 acres each of highly valuable land, and many metropolitan areas now require two, three and sometimes four major airports. Can we now acquire substantial additional acres for noise abatement? In the New York-New Jersey Metropolitan area, for example, densely populated communities affected by aircraft noise stretch a number of miles from the airport. The suggestion that these hundreds of thousands of people be removed from such large areas and that the land be redeveloped for industrial purposes is politically, socially, and economically impossible.

The problem is not local; it is national, indeed world-wide. Seventy per cent of all United States air commerce is conducted at 22 major hubs and a majority of them have serious noise problems. Without these major hub airports, there is no national air transport system. In fact, the problem of aircraft noise has reached such proportions that the Fifth Air Navigation Conference of the International Civil Aviation Organization meeting in Montreal in December 1967, attended by 61 nations and five international organizations, adopted as part of its Recommendation 7/5:

"That (i) substantially quieter aircraft be made available and introduced into service as soon as possible; (ii) for the above purpose a system of aircraft noise certification (as suggested at the 'International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft,' London 1966) (the London Noise Conference) is urgently needed."

We need better standards for the measurement of aircraft noise, and we need as well to have the Administrator of the Federal Aviation Administration empowered to set maximum limits for the noise aircraft can make in populated areas. Such powers are provided in H.R. 3400. In addition, H.R. 3400 also provides for the control of sonic boom now before the manufacture of supersonic aircraft. Such foresight on the part of the Congress will preclude untold property damage, as well as the anguish of millions of Americans.

And finally, the certification for noise should apply to aircraft now in the fleet, in production or on the drawing boards, since the principal aircraft projected for fleet service through 1990 are all in one category or the other. Unless it does, Federal noise legislation would have no practical effect for nearly 25 years. Mr. Chairman, I do not believe either the people around our airports, or, indeed, the aviation industry itself can wait that long.

I trust that these comments are useful to the Committee in its deliberations. The Port Authority commends it to the Congress, as, I am sure, do the millions of people from coast to coast, who live within "hearing" distance of our American airports. I would appreciate your including this letter in the record of your hearing.

Sincerely,

AUSTIN J. TOBIN,
Executive Director.

THE PORT OF NEW YORK AUTHORITY,
New York, N.Y., June 20, 1968.

HON. A. S. MIKE MONRONEY,
Chairman, Subcommittee on Aviation,
New Senate Office Building, Washington, D.C.

DEAR SENATOR MONRONEY: The Port of New York Authority has read with concern the statement of Mr. Stuart G. Tipton, President of the Air Transport Association of America, before the Senate Aviation Subcommittee during its hearings on H.R. 3400 on June 17. As you will recall, I wrote to you on June 14 to state the Port Authority's support of this vital and important legislation.

Mr. Tipton's statement before your Committee is merely a reiteration of the ATA's long-standing policy of opposition to any effective Federal intervention in aircraft noise abatement. While the ATA purports to support the idea of effective regulation and control of aircraft noise through a Federal program of aircraft certification, the legislation which it proposes in lieu of H.R. 3400 would, in fact, do no such thing.

Under the ATA's proposed bill, aircraft noise and sonic boom standards, rules and regulations would be limited to the granting of only the aircraft type certificate by omitting the following language contained in H.R. 3400, ". . . including the application of such standards, rules, and regulations in the issuance, amendment, modification, suspension, or revocation of any certificate authorized by this title," and by specifically excluding their application to an airworthiness certificate. This would mean that an aircraft, after the grant of a type certificate, could be operated by the airline in such a way that the aircraft would no longer meet the FAA's noise and sonic boom standards. Mr. John L. Sweeney, Assistant Secretary for Public Affairs for the Department of Transportation, in a letter dated March 1, 1968 to Hon. Harley O. Staggers said: "We would strenuously object to the ATA proposal prohibiting an action to amend, modify, suspend, or revoke an airworthiness certificate for noise abatement or sonic boom purposes. If an aircraft in operation by a carrier ceases to conform to its type certificate, an action against the airworthiness certificate should be available."

Further, the ATA bill would withhold from the FAA the power to require the airlines to retrofit or treat current aircraft with any present or future technological development in noise abatement on the grounds that such a program might be costly to the airlines. But the costs which Mr. Tipton cites are miniscule compared to the staggering costs of a compatible land use program in urban areas of our nation. It has been conservatively estimated that it would cost *more than $3 billion* to acquire seriously affected areas in the New York Metropolitan region *alone*, if it were possible to overcome the very real social, political and economic problems of relocating hundreds of thousands of people from their homes. Yet, there are 22 major airports in the United States at which 70 percent of all U.S. air commerce is conducted and of which the majority have serious noise problems. Mr. Chairman, if we are concerned with the cheapest way of alleviating this most serious social problem, then a retrofit program would by far be the cheapest.

Mr. Tipton cited several other costs accruing to the airlines because of noise abatement procedures. A quieter airplane, of course, could reduce the need for such procedures. But Mr. Tipton failed to take cognizance of even greater costs to aviation by its failure to deal with the problem of noise. To a great extent, the concern of citizens for aircraft noise has successfully and repeatedly blocked the development of new airports at such major metropolitan centers as New York, London, Tokyo and others. The cost to aviation of the continued inability to provide desperately needed new airports is incalculable.

Now, we are faced with even more serious threats to the orderly conduct of airport operation. There have been anti-aviation riots in Tokyo in which hundreds have been injured. In New York, the threat of such demonstration is very real, and in the absence of a more positive and effective approach to aircraft noise abatement, violence might very well occur.

Yet, in view of this serious situation, it seems incredible that, according to the Aviation Daily of March 22, 1968 in a report on a recent conference on aircraft noise held by the International Air Transport Association, the airlines are still proposing "a public relations campaign that is effective, balanced, continuous and systematic as the airlines best strategy to deal with jet noise problems raised by communities and government." One airline official at this same

conference stated that "Airline public relations must convince the public that jet noise is no worse an annoyance than other rackety paraphernalia of progressive life—the pneumatic drill, the tramcar, the truck."

Along the same lines, Mr. Tipton has high praise for an airline-organized group called the National Aircraft Noise Abatement Council, or NANAC, and he makes great claims for the contributions of NANAC to the reduction of aircraft noise. I believe the record should show that the American Association of Airport Executives and the Airport Operators Council International both withdrew from membership in NANAC due to their frustration over the lack of positive accomplishments by NANAC in the field of aircraft noise reduction. The board of Directors of AOCI took formal action to withdraw from NANAC on February 6, 1968, and in so doing termed further membership in NANAC "futile" and charged publicly that the efforts of the airlines and aircraft manufacturers acting through NANAC "have been largely a smoke screen which prevents a solution of the noise problem." At that time, the AOCI set forth a "Positive Action Program" which urged, among other things, that Congress pass H.R. 3400. For your information, I am attaching the statement that the AOCI issued on February 6, 1968.

The Congress, through prompt passage of H.R. 3400, can vividly demonstrate to our citizens its concern for their welfare and well being and thus do much to ameliorate the militant attitude now evident in communities near airports everywhere.

I trust these comments are useful to the Committee in its deliberations. I respectfully request that you include this letter in the record of your hearings.

Sincerely,

AUSTIN J. TOBIN,
Executive Director.

NATIONAL BUSINESS AIRCRAFT ASSOCIATION, INC.,
Washington, D.C., June 17, 1968.

Senator A. S. MIKE MONRONEY,
Chairman, Aviation Subcommittee to the Committee on Commerce,
New Senate Office Building, Washington, D.C.

DEAR SENATOR MONRONEY: The National Business Aircraft Association requests the Aviation Subcommittee to give favorable consideration to H.R. 3400, a House Bill that would enable the certification of jet aircraft engines on the basis of noise. This bill has been passed by the House of Representatives.

The NBAA was the first organization in government or the aviation industry to develop and publish a complete Noise Abatement Program (June 1967). Although copies were sent to the members of the Aviation Subcommittee at the time of publication, an extra copy is enclosed for the current record. The business aviation industry operates more than 500 jet aircraft into nearly 2,000 airports. These jets are smaller than the air carrier jets. Their noise level is lower, and their activity is not as acutely concentrated at a few major airports. None the less, we have felt the need to demonstrate responsibility and leadership in noise reduction and community relations.

As indicated in the NBAA Noise Abatement Program, a complete noise abatement program has four phases, each of which is relatively worthless without commensurate progress in the other three. The four phases are: (1) Land use planning. (2) Aircraft engine noise reduction. (3) Air Traffic Control procedures. (4) Flight procedures.

Representing an industry that operates aircraft, we have direct control only over phase #4. This phase is the easiest to implement, and the amount it can accomplish by itself has been overstated.

Some progress is being made in improved air traffic control procedures. The lagging phase at the present is land use planning. One key to effective land use planning is a limitation on airport runway length. At some time, probably right now, it will be necessary to say that future aircraft will be designed to operate on existing runway lengths. It is difficult to plan use of land off the end of a runway if that runway end is continually being extended.

H. R. 3400 concerns itself only with the jet engine noise phase of aircraft noise abatement. It would vest necessary authority in the Federal Aviation Administration. Such authority could be abused. Noise emission design limits could be beyond the state of the art and, thereby impose excessive operational penalty.

Retrofit requirements to existing engines could cause airframe redesign to the point of economic unacceptability. If H. R. 3400 is passed, as we believe it should be, the key to its implementation is the reasonable judgment of reasonable men.

The jet aircraft engine noise level is one of the four critical phases of a comprehensive noise abatement program. H. R. 3400 is needed to enable progress in this phase. We urge its passage.

Respectfully,

JOHN P. WOODS,
Executive Assistant.

NBAA
Noise Abatement Program

Aviation Department personnel from the following NBAA member companies have evaluated the NBAA Noise Abatement Program in detail, including flight test of the procedures.

Texaco, Inc.
Olin Mathieson Chemical Corp.
Union Carbide Corp.
Honeywell
General Motors Corp.
International Paper Company
Nine-Ten Corp.
McCulloch Properties, Inc.
Continental Can Co., Inc.
AMP Incorporated
Butterworth System, Inc.
Timken Roller Bearing Co.
American Cyanamid Co.
United States Rubber Co.
Paul Mellon
Caterpillar Tractor Co.
Mellon National Bank & Trust Co.
Bethlehem Steel Corp.
Stauffer Chemical Co.
Standard Oil Co. of California
Mobil Oil Corporation
Sinclair Oil & Gas Company
Monsanto Company
Square D Company
Westinghouse Electric Corp.
Aerojet-General Corp.
Outboard Marine Corp.
Mine Safety Appliances Co.
Lukens Steel Company
International Business Machines Corp.
W. R. Grace & Company
Trunkline Gas Company
National Distillers & Chemical Corp.
Martin Marietta Corp.
The Weyerhaeuser Company
Rust Engineering Co.
Kimberly Clark Corp.
Skelly Oil Co.
Johnson & Johnson
Colorado Interstate Gas Co.
General Electric Co.

The following manufacturers and distributors of business jet aircraft have rendered invaluable technical guidance. Their contributions are gratefully acknowledged.

Aero Commander Division, Rockwell Standard Corporation

Atlantic Aviation Corporation

Avion Marcel Dassault

Douglas Aircraft Company

Grumman Aircraft Engineering Corporation

Hawker Siddeley International, Inc.

Lear Jet Industries, Inc.

Lockheed-Georgia Company

North American Aviation, Inc.

Pan American World Airways, Inc., Business Jets Division

NATIONAL Business Aircraft ASSOCIATION, Inc.

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April 26, 1967

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Eastern Aviation Services, Inc.
Fort Lauderdale, Florida

ROBERT B. WARD
Executive Director
Secretary

Mr. Donald A. Baldwin, Chairman
NBAA Technical Committee
c/o Texaco, Inc.
Air Transportation Department
Teterboro, New Jersey

Dear Mr. Baldwin:

It is my privilege to advise you that the NBAA Board of Directors unanimously approved the NBAA Noise Abatement Program, as submitted by the Technical Committee, on April 25, 1967.

The Board was particularly impressed by your constructive and responsible recommendations, by the depth of your research, and by the number of NBAA member companies whose detailed participation in development of the Program you have secured.

Cordially,

Horace E. Wood

HEW:cdb

Horace E. Wood
President

NATIONAL Business Aircraft ASSOCIATION, Inc.

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March 14, 1967

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Eastern Aviation Services, Inc.
Fort Lauderdale, Florida

ROBERT B. WARD
Executive Director
Secretary

Mr. Horace E. Wood
NBAA President
c/o The Gillette Company
Boston, Massachusetts 02128

Dear Mr. Wood:

Submitted herewith is the Final Draft of the suggested NBAA Noise Abatement Program.

This program was prepared by the NBAA Technical Committee, with the assistance and concurrence of NBAA Staff. It is presented to the NBAA Board of Directors with the hope that it may be approved as NBAA policy on this important subject.

Respectfully Submitted,

Donald A. Baldwin
Chairman NBAA Technical Committee

DAB:cvw
#67C-238

cc: Members NBAA Board of Directors

PREFACE

As the attached NBAA Noise Abatement Program attempts to indicate, flight procedures are only one of several parts of an effective program. They are, however, the only part over which NBAA members, as aircraft operators, have direct control. We have, therefore, described flight procedures in specific detail. Other facets of the total program have been described in general terms with the hope that responsible agencies will be encouraged to take appropriate action.

Pilots for NBAA member companies are urged to utilize NBAA noise abatement flight procedures whenever, in their judgment, beneficial community relations will result. They are urged to do this even in the absence of formally designated, or required procedures at the airport or runway they are using. We envision that certain localities may adopt procedures in variance with NBAA's. In such cases, NBAA members are requested to conform with the local procedures, within the limit of safety and professional judgment, and to report the specifics of the variance to NBAA Headquarters.

OBJECTIVES

In developing the NBAA Noise Abatement Program the Technical Committee has held in mind the following objectives:

Jet Aircraft Noise Abatement Procedures must be:

1. Safe. They must not only meet the requirements of charted aircraft performance, they must also provide adequate safety margin so that a prudent, competent pilot will be willing to use them on a repetitive and routine basis under varying conditions.

2. Standard. So that the same procedures will be applied to all runways and all airports having a requirement for such procedures. For example, the entry and terminal points of the second (reduced power) segment of the departure procedure should be expressed as an altitude not as a geographic fix. Similarly, the terminal point of this second segment should be based on an altitude at which return to climb thrust will no longer cause a critical noise nusiance. It should not be based on purely local factors.

3. Flexible. The specifics of the NBAA Procedures are flexible to accommodate thoroughly documented, improved ideas and techniques. Any changes that result must then become the standard.

4. Uniform. NBAA has willingly accepted procedures invoking operational penalty on its members which cannot be justified solely by the noise level reduction achieved by each aircraft type. We have felt it necessary to make this significant compromise to achieve a standard procedure.

5. Uncomplicated. Complexity will create misunderstanding, lack of use, loss of effectiveness. This is particularly true as procedures are applied to the number of airports frequented by business jets, and considering the lack of pilot familiarity with all of these airports.

6. Limited To Realistic Objectives. Flight procedures are only one of several phases of a complete noise abatement program. As they alone can be immediately implemented, we have noted a tendency to use them beyond their capability, as a means of resolving the whole problem. We believe this tendency is self-defeating, particularly when it is used to mislead the general public as to the effectiveness of flight procedures.

NBAA Noise Abatement Program

NBAA's requirements and recommendations for a nationwide program directed toward reducing aircraft noise over populated areas are listed herein as they apply to:

A. NBAA MEMBERS

1. NBAA Members will accept responsibility for operating their aircraft so as to reduce noise to the lowest practicable level. Noise abatement procedures designed to achieve this result must be safe, standardized, and not unduly restrictive to the flow of air traffic.

B. LOCAL COMMUNITIES AND AIRPORTS

1. NBAA Members will make every effort to participate in their local airport affairs, particularly as they concern jet aircraft and noise abatement procedures.

2. NBAA strongly urges completion of research that will enable specific noise contours to be presented to communities having airports frequented by business jet aircraft. These contours should be based on optimum noise abatement flight procedures as described in paragraph G, below.

3. NBAA strongly believes that communities must be given factual data to the effect that airport noise levels below those achievable through the procedures described below cannot be realistically anticipated. They should be informed concerning the many significant noise reduction efforts being made by the aviation community.

4. The noise abatement procedures contained herein are recommended as a nationwide standard for business jet aircraft that may be applied to any noise sensitive airport. Procedures adopted by any locality must conform to the nationwide standard to ensure pilot understanding, acceptance, *and use.*

5. Airport approach and take-off paths should be designated on all zoning maps. This should be done for all airports, existent or proposed, in order that real estate activity may be made fully aware of the confines of such areas. Similarly, the land use permitted in these areas should be specified in zoning regulations and building codes in order to protect inhanitants.

6. Airport managements should develop run-up areas for jet aircraft located so that engine noise will not unduly disturb nearby community or airport tenants. Blast fences should be provided where necessary.

C. AIRFRAME & ENGINE MANUFACTURERS

1. The lowest jet engine noise levels that can be achieved by engine and airframe manufacturers without imposition of excessive operational penalty should be determined. Newly designed aircraft should be required to remain within these noise limitations. Any noise reduction achieved at the manufacturing level results in some operational penalty. Therefore, any initial regulatory noise limitation on manufacturers should be confined to that which can be achieved within the existing state of the art. Any regulatory action should have sufficient flexibility to permit further noise level reductions as they are developed.

2. NBAA will determine from the business jet engine and airframe manufacturers the specific power settings that will achieve the flight profile specified below in paragraph G (Flight Procedures).

These power settings may be charted, if necessary, to allow for aircraft gross weight, air temperature and airport altitude variations. This chart should be based on maximum gross take-off weight as specified in the Flight Manual. These suggestions are based on the opinion that business jet aircraft have limited gross weight flexibility without incurring unrealistic operational penalty. Therefore weight reduction as a means of achieving noise abatement is not practical for business jets.

The resultant power setting, expressed in EPR or RPM, will provide:

a) Sufficient engine spool RPM to permit rapid spool-up of the good engine in the event of engine failure.

b) Sufficient engine RPM to operate anti-icing equipment.

c) Sufficient engine RPM to operate component equipment.

d) Sufficient engine thrust to provide a sustained rate of climb of 1000 fpm.

D. FLIGHT DATA (NOTE: Minor modifications to the specifics of this data, as may be indicated by new research, will be considered.)

1. Specific data should be developed for any airport where it is needed and made available to the pilot through publication in flight manuals. This data should include:

a) Approach and departure routes over least noise-sensitive areas.

b) Preferential runway usages.

c) Distance in feet from point of brake release to nearest noise-sensitive area.

E. PILOT TRAINING

Pilot training should include basic noise abatement procedures in all type ratings and ATR flight checks for business jet aircraft.

A pilot education program should be provided to inform pilots as to need for, and procedures associated with, noise abatement and good community relations. NBAA will initiate such a program as soon as agreement concerning its specifics (proposed herein) is reached between NBAA and other affected agencies.

F. AIR TRAFFIC CONTROL PROCEDURES

1. Preferential runway use systems that are safe and do not unnecessarily restrict the flow of air traffic should be established at all airports having a need for them. Excessive emphasis

on preferential runway use by other than jet aircraft should be avoided.

2. Control Tower operators should be permitted to give any needed special attention to jet aircraft that may, for noise abatement, be required to land or take-off using a different runway than the one in use by smaller aircraft.

3. Air Traffic Control procedures should keep aircraft more than 3000 feet above field level when over noise sensitive areas to the extent that can be accomplished without excessive derogation of air traffic flow.

G. FLIGHT PROCEDURES

The prime requirement for an acceptable noise abatement procedure is that it will ensure operational safety. Secondly, it will produce the lowest sound level over noise sensitive areas that can be achieved by each aircraft type within its safe operating limits.

Listed below is a recommended standard noise abatement procedure to be applied to all noise sensitive airports. It has been developed to cover:

a) Take-offs "Standard" – (for communities more than 10,000 feet from brake release point); and "Close-in" – (for communities less than 10,000 feet from brake release point).

b) Approach & Landing – VFR

c) Approach & Landing – IFR

1. Take Off

a. STANDARD PROCEDURE

1) Maintain maximum power and take-off flap setting to 1,500' AFL for a maximum rate-of-climb subject to items in paragraph 2 following.

2) Maintain V_2 + 25 IAS with a maximum deck angle of 15°.

(NOTE: Where a 15° deck angle is specified here and in subsequent paragraphs note that NBAA will consider specifying a slightly steeper angle if significant noise reduction results and if sufficient separation from other traffic is provided to compensate for lack of pilot visibility over the nose of the aircraft.)

If deck angle exceeds 15°, optionally reduce power to continue climb-out at V_2 + 25 K IAS at a 15° deck angle.

3) Flight path outbound from take-off should not require any turn below 300' AFL, and not more than a 15° bank.

4) At or before 1,500' AFL, retract flaps (if possible) and set power at a specified EPR or RPM so as to climb to 3,000 AFL, not exceeding 200 K IAS and 1000 fpm sustained rate of climb. If ATC requires a level-off prior to reaching 3,000' AFL, no power change is required.

5) Above 3,000' AFL, normal climb schedule.

b. CLOSE-IN PROCEDURE (*)

(*) For communities less than 10,000' from brake release point.

1) Accelerate to V_2 + 25 K IAS.

2) After crossing airport boundary and after reaching 300' AFL reduce to a specified EPR or RPM that will maintain V_2 + 25 K IAS and a sustained 1,000 fpm rate-of-climb at a maximum deck angle of 15°.

3) Flight path outbound from take-off shall not require any turn below 300' AFL and not more than a 15° bank.

4) At or before 1,500' AFL, retract flaps (if possible), and set power at a specified EPR or RPM so as to climb to 3,000' AFL not exceeding 200 K IAS and 1,000 fpm rate-of-climb. If ATC requires a level-off prior to reaching 3,000' AFL, no power change is required and IAS may be allowed to increase.

5) Above 3,000' AFL, normal climb schedule.

2. Approach and Landing Procedures

a. VFR

1) Inbound flight path will not require more than a 20° bank to follow noise abatement track.

2) Initial inbound altitude for noise abatement areas will be a descending path from 3,000' AFL (reference: Paragraph F. 3, above).

3) IAS will be reduced to a maximum of 200 K at 1,500' AFL.

4) Downwind and base leg, or straight-in approach, shall be at a maximum IAS of 160 K, with not more than take-off flap (or approach flap, if applicable).

5) A 6° Glideslope is recommended for use to within 2 miles of the runway threshold, and a 3° Glideslope from the 2 mile point to the threshold.

6) After passing one mile mark inbound from threshold, full flap may be used.

b. IFR

1) Inbound flight path will not require more than a 20° bank to follow noise abatement track.

2) IAS and altitudes as directed by Approach Control, but not to exceed 250 K IAS or less than $V_{1.4}$ at take-off (or approach, if applicable) flap.

3) Maximum of take-off (or approach, if applicable) flap to the outer marker, with landing flap delayed until required.

4) Further development of a 6° Glideslope to within three miles of the runway threshold, followed by a 3° Glideslope for the final three miles is encouraged.

AIRPORT OPERATORS COUNCIL INTERNATIONAL, INC.,
June 25, 1968.

Hon. A. S. MIKE MONRONEY,
Chairman, Subcommittee on Aviation, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR SENATOR MONRONEY: During the Senate Subcommittee on Aviation hearing on H.R. 3400 (aircraft noise and sonic boom) held June 17, 1968, the Air Transport Association (ATA) proposed a redraft of the bill which we have now analyzed and on which we would like to comment for the record.

The ATA proposed aircraft noise bill is completely unacceptable to the U.S. Members of the Airport Operators Council International. The bill's main provisions would destroy the possibility of effective and realistic government control of the aircraft noise and sonic boom problems.

The ATA proposal would limit the government's authority to promulgation of aircraft noise and sonic boom control and abatement rules and regulations to aircraft type certificates only. This means that

1. no *current* types of aircraft would have to meet any noise abatement and control rules and regulations, and
2. no *future* types of aircraft would have to be operated in accordance with such noise abatement and control rules and regulations.

NOTE.—The type certificate is issued by the FAA to the manufacturer at the time a new type of aircraft is produced, but airworthiness and operating certificates are issued subsequently to the air carrier to assure that the aircraft is operated in accordance with suitable operating criteria.)

The ATA proposal, obviously, is no solution—since increased volume of operations of present aircraft types will continue to aggravate an already serious problem.

H. R. 3400, as passed by the United States House of Representatives, would provide the Federal government with the necessary authority to effectively and comprehensively meet the aircraft noise problem through:

a. *measurement* standards,
b. *criteria* for determining acceptable levels of aircraft noise and sonic boom, and
c. the development, application and *enforcement* of standards of acceptable noise and sonic boom levels to *present and future* aircraft through type certificates, airworthiness certificates and operating certificates.

Today's aircraft noise problem is created by today's aircraft. Technology is available today to significantly reduce the noise problem created by today's aircraft. FAA and NASA agree this can be achieved through modifications to current engines, particularly acoustical treatment.

That significant improvements are technically feasible is clearly evident from the fact that:

The new Pratt and Whitney JT9D engine which will be used in the Boeing 747 (Jumbo Jet) will have double the thrust of the present JT3D engines used on 707s and DC8s but will generate considerably less noise. Thus, the Boeing 747, although *2.3 times heavier* than the Boeing 707–100, is stated to be up to 11 EPNdb *quieter* than the 707 on take-off.

The U.S. Supersonic Transport design noise characteristics have been progressively lowered through technological developments from 112 PNdb in 1963 to 96 EPNdb on take-off in the winning Boeing/G.E. design.

Various NASA and FAA research contracts indicate significant noise reductions of up to 20 EPNdb are achievable under NASA's "quiet engine" development project.

Enclosed is a short historical summary detailing the need to develop (a) standards for maximum aircraft noiise levels, (b) legislative authority to authorize the Federal government to establish noise abatement and control rules and regulations, and (c) the ability to achieve noise reductions in present and future aircraft.

H.R. 3400 will insure that available technology to control and abate noise of present aircraft, and technological developments to control and abate noise of future aircraft are required to be used by all airlines and airframe manufacturers. The ATA proposed bill will not do these things.

We therefore urge prompt Senate passage of H.R. 3400 without any further amendments.

Sincerely,

E. THOS. BURNARD,
Executive Vice President.

Aircraft Noise

Reduction of Noise at the Source

Summary

During Congressional Hearings in 1962 on aircraft noise, it became apparent from testimony by the FAA and the engine and airframe manufacturers that

a. the manufacturers' customers (the airlines) seek more aircraft power for less weight without regard to noise; and that

b. lack of a "maximum noise" critera, established by the federal government, was a deterrent to manufacturers to achieve greater noise suppression.

This confirmed a 1960 House Committee recommendation that "noise criteria be mandatory requirements in drafting specifications for future . . . aircraft."

Subsequently, it became apparent with the introduction of Boeing 727 aircraft, that noise suppression devices could be designed into new engines and aircraft. Engine and airframe manufacturers advised the White House Interagency Noise Abatement Program that 15 to 20 Pndb noise reductions are well within the state-of-the-art, i.e., technically feasible.

FAA and NASA also indicate that significant reductions in noise are capable—both technically and economically—by (a) modifications to present engines; (b) retrofits of present aircraft with new engines incorporating noise suppression techniques, and (c) in future aircraft with new "quiet engines."

1. No incentive existed to build quiet aircraft

It was early recognized that while the aircraft and engine manufacturers were cognizant of the aircraft noise problem, their competitive positions did not permit them to unilateral take necessary actions, and commit necessary funds to the research needed to build quiet aircraft. As Daggett Howard, FAA's General Counsel, told the House Science and Astronautics Subcommittee in 1960:

"I might point out that those who are engaged in developing engines and aircraft are competing with each other for performance for an aircraft that will do work and do it efficiently and cheaply. This leads them to build into engines and aircraft maximum performance characteristics without regard to noise." [1]

John Tyler of Pratt & Whitney told the House Interstate and Foreign Commerce Committee in 1962:

"The engine manufacturer builds engines to suit his customers. If the customer wants a less efficient engine than we could build and will pay more for it than the improved engine, obviously this is what we will build, but the general scheme of things is that he is continually pushing for more power for a given size and weight. I would like to point out that the future is not a bed of roses and if things take their normal course, there will be factors which will tend to increase the noise levels from new engines." [2]

And Dr. Spiridon N. Suciu of General Electric told the same Subcommittee:

"My own feeling is that right at the moment there is not enough going on to generate, as I mentioned a while ago, the body of knowledge that you need to be creative from. You don't get creative out of a vacuum." [3]

a. Some felt that little could be done to solve the noise problem

It was the position of some people that little could be done to reduce the noise problem and, in fact, it could only get worse. In 1962 John Tyler, Pratt & Whitney, told the House Interstate and Foreign Commerce Committee:

"The present fan engines and those under development at the present time are near optimum for the present state of the art from the standpoint of minimum noise on the ground at the measuring points being used during takeoff. And I think here we should emphasize this point, that this is based on the present state of the art." [4]

And Mr. Harry H. Howell of the Boeing Co. said:

"Engines are getting larger, aircraft are getting larger, and we are just not going to immediately make any big break-through in aircraft noise in my opinion." [5]

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[1] "Noise: Its Effect on Man and Machine," Report of the Committee on Science and Astronautics, U.S. House of Representatives, 86th Cong., Second Sess., p. 47.

[2] Hearings before subcommittees of the Committee on Interstate and Foreign Commerce, U.S. House of Representatives, 86th and 87th Cong., Dec. 4–6, 1962, p. 594.

[3] Supra note 2 at p. 622.

[4] Supra note 2 at p. 597.

[5] Supra note 2 at p. 614.

2. The missing ingredient was a "uniform goal"

Daggett Howard, of F.A.A., explained to the House Science and Astronautics Committee in 1960:

"If there is no general limitation on noise criteria there certainly is no incentive to each developer to adhere to some standards that he may worry about whether his competitor is adhering to, if I make myself clear." [6]

a. Need to establish "maximum noise levels"

The obvious conclusion was that the establishment of "maximum aircraft noise levels" were needed in order to abate the growing noise problem, to encourage and require manufacturer investment in noise reduction research, and to give manufacturers noise reduction bench marks to aim at.

This need was noted by Bernard Schmickrath, engineering manager for Pratt & Whitney:

"We recognize as far as the engine work is concerned that we want to, and need to, improve the noise suppression situation. We recognize that, and we need a set of standards to shoot for to do this.[7]

and by Dr. Paul S. Veneklasen of Western Electro-Acoustic Laboratory, in 1962 before the House Interstate and Foreign Commerce Subcommittees:

"In summary, I say, briefly, again, we believe that noise limitation is possible for aircraft operation if conscientiously pursued in early design; and that interim measures as to noise regulation should be established in the way of conscientious design; . . ." (page 590)

* * * * * * *

"We need a continuing established regulation of some sort to be sure that the effort for noise control will continue." (page 592)[8]

In fact, "noise criteria" was one of the recommendations made in the Report of the House Committee on Science and Astronautics as far back as 1960:

"VII. Recommendations.

"(3) That noise criteria be mandatory requirements in the drafting of specifications for future military and civil aircraft, rockets, and missiles, consistent with the necessity for military performance." [9]

3. Technical innovations begin to reduce noise

In 1962, Jack Steiner of the Boeing Company stated that noise could and would be reduced in the new Boeing 727. He gave the following reasons: use of a new turbo-fan type of engine, built in sound suppressors, and superior rate of climb of the aircraft.[10] His predictions were confirmed a year later during demonstration flights at New York.[11] The Boeing Company proved that there is no technical problem in developing larger aircraft with greater power without increasing noise.

Conversely, the principle was established that significant reductions in noise from present levels are technically feasible with or without an increase in power. Predicted noise characteristics for the power plants of the 747, DC–10 and Lockheed 1011 further confirm this principle.

4. Other technological innovations take shape

At a meeting of the National Aircraft Noise Abatement Council's Research Committee in November 1964 Mr. John Tyler of Pratt & Whitney stated that a great deal of noise abatement research was being conducted at Pratt & Whitney. Research, he said, indicated that:

a higher bypass fan ratio on the order of 4 or 5 to 1 could result in engine noise reductions of 15 to 20 decibels,

duct heating in fan engines could produce up to 50% more thrust with a reduction of 12 to 15 decibels in community noise, and

larger noise reductions were available in selecting the proper engine cycle rather than concentrating on noise suppressors.

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[6] Supra note 1 at p. 47.
[7] *Supra* Note 1 at page 47.
[8] *Supra* Note 2.
[9] *Supra* Note 1 at page 51.
[10] Chicago Tribune, Nov. 29, 1962.
[11] Long Island Star Journal, Sept. 7, 1963.

5. *Significant noise reductions are now within the state-of-the-art*

The report of Subcommittee II on Technology to the White House Office of Science and Technology "Program Evaluation and Development Committee" prepared in the summer of 1967 states:

"Mr. Tyler (Pratt & Whitney) in reporting on his company's noise R&D indicated that there were many similarities in P&W's in-house programs to those of other organizations. In referring to past P&W work he stated that while a great deal of it had been reported in technical society type papers, that such papers do not really contain much data; it is still in company files. Such information and that from more recent programs could be made available under contract. He also indicated that a 15 to 20 PNdb engine/nacelle noise reduction goal is considered to be *within the present state of the art* and additional R&D should start from here.

"Dr. Suciu (General Electric) in reviewing G.E.'s work commented that its program is directed at the incorporation of research into real aircraft systems. He agreed that goals of 15 PNdb to 20 PNdb reduction in fan noise with duct suppression are conservative and *within the state-of-the-art.*"

a. *Some Technical Innovations Are Applicable For Retrofit Of Today's Aircraft.*

The first Recommendation of Subcommittee II (in calling for a study of the performance, cost and other associated aspects of implementing various aircraft noise reducing technical innovations) noted that:

"1. It was developed during discussion that the engine companies believe that significant reduction in noise can be accomplished within the present state-of-the-art. It was pointed out that *current* jet transport engine nacelle combinations could be modified to produce approximately 5 to 10 PNdb less for relatively little performance penalty and be demonstrated in approximately *18 months.* Also, it was pointed out that advance large high by-pass ratio engines (such as planned for the USAF C–5A and Boeing 747 aircraft) contain new design innovations to reduce the noise level and could be scaled to fit *current* transport aircraft with a reduction of 15 to 20 PNdb compared to current operational noise levels."

Thus, it appears that within the present state of the art current jet engines being used can be *modified now* to achieve noise reductions within 18 months. And, scaled down versions of new high by-pass ratio engines can be *retrofitted on today's aircraft* to produce 15 to 20 PNdb reductions in noise.

6. *FAA takes a first step towards reduced aircraft noise*

On September 27, 1967 the Federal Aviation Administration, Office of Noise Abatement issued an *Aircraft Noise Certification Alternatives* paper proposing aircraft noise reduction goals for certification of aircraft and procedures for measuring aircraft noise for certification purposes.

This FAA document notes that new high bypass ratio engines can be developed *within the state of the art* in time for incorporation in new aircraft design. The document states:

". . . When such engines are installed in a nacelle designed to attenuate fan and compressor sounds, it is expected that noise reductions of approximately 18 EPNdb can be achieved below current operating levels on aircraft of equivalent weight. This figure represents a compromise since noise reductions in excess of 20 EPNdb are believed to be within the state-of-the-art, but excessive economic penalties would result from extracting the last few db within today's level of technology.

"An additional increment of quietness can be achieved by taking advantage of another inherent characteristic of high bypass ratio engines; the thrust lapse rate or decrease in thrust with altitude. High bypass ratio engines will be cruise thrust limited, therefore, sized for cruise conditions. Since the longer range aircraft will have to be powered to cruise at relatively high flight levels to be useful in the crowded airspace of tomorrow, oversize engines required for cruise will provide a takeoff acceleration and climbout capability considerably improved over the four-engine aircraft of today and hopefully better than today's three-engine aircraft.

"Tomorrows aircraft may have a number of capabilities built into them which, while not reducing the noise at the source would help reduce noise through operational procedures (more crosswind capability, more downwind capability, more rapid climbout capability, steeper descent capability, more controllability at low speeds, direct lift control, etc.)"

7. *The aircraft noise problem must be attacked at its source*

Dr. Donald F. Hornig, Director, Office of Science and Technology testified before the House Committee on Science and Astronautics on February 28, 1968 as follows:

". . . the most important directions for our work in (aircraft) noise alleviation must be through reducing noise at the source—i.e. through modifying the acoustical properties of currently available engines, through developing equipment enabling less noisy aircraft operating procedures near airports, and through providing, and as rapidly as possible, basically quieter jet engines."

8. *We can reduce aircraft noise today*

The Federal Aviation Administration's Aircraft Noise Abatement Office, the NASA, and primary airframe and engine manufacturers are in agreement that, through the use of today's *currently available* technology, we can effectively reduce jet aircraft noise on take-off and landing by one-half. Modification of today's jet engine nacelles, through the use of acoustical treatment can result in noise reductions of about 7 PNdb on take-off and 11 PNdb on landing.[12]

The cost to achieve these reductions is estimated, for one major U.S. airline at only $4 million per year, over a five year period.

The *U.S. SST* design competition demonstrates the extent to which reduced noise annoyance can be "built into" aircraft design when manufacturers are given sufficient incentive. For the three key geographical points around an airport, the following shows how the design noise annoyance characteristics of the U.S. SST have been progressively lowered through technological developments during the past years.

	3 miles from start of T.O.	1 mile from landing threshold on approach	1,500 feet laterally on T.O.
RFP of August, 1963	112 PNdb	Less objectionable than current international subsonic jets.	Tolerable to average traveler and airport employee.
Phase II A, 1964	108 PNdb	118 PNdb	118 PNdb.
Phase II B, 1965	105 PNdb	109 PNdb	116 PNdb.
Phase II C, 1966	105 EPNdb	109 EPNdb	116 EPNdb.
Winning Boeing/G.E. engine proposal.	96 EPNdb	98 EPNdb	119 EPNdb.

The 700,000 ± lb. *Boeing 747* also demonstrates how technological advancement has permitted holding the line on noise or even reducing it although the max. gross weight has increased to 2.3 times that of the original 707–100. Using the same three reference points as for the SST above, the following is a comparison of the 707–120 and 747:

	3 miles from start of T.O.	1 mile from landing threshold on approach	1,500 feet laterally on T.O.
FRP of August 1963	112 PNdb	Less objectionable than current international subsonic jets.	Tolerable to average traveler and airport employee.
707–120	118 EPNdb	110 EPNdb	111 EPNdb.
747	107 EPNdb[1]	107 EPNdb[1]	101 EPNdb.[1]

[1] Original announced design objectives.

Illustrative of the extent to which reduction of noise annoyance affects 747 design was the announcement that Boeing has abandoned the "blown flap" on the 747 in favor of the triple-slotted trailing edge flap of the 727, *to reduce approach noise*—the blown flap would have required higher power settings on approach.

Earlier Government-sponsored research into lowering noise annoyance at the source has been augmented as the result of the President's Inter-Agency Aircraft Noise Abatement Program. Significant are:

NASA $10 million contracts to Boeing and Douglas to study turbofan nacelle modifications and achieve a *15 PNdb reduction in approach noise.*

NASA projects in Inlet and Fan Discharge Duct Noise Suppression and Choked Inlet Flight Tests.

[12] DOT Noise Research Panel Meeting, March 1968.

FAA contract to G.E. to study choked inlet guide vanes to suppress compressor noise.

NASA's "Quiet Engine" Project, aimed at a *20 PNdb reduction in noise over present jet engines* has been included in NASA's fiscal 1968 budget.

9. NASA sees noise reduction for present aircraft

" . . . with the tests we have just recently completed, by modifying nacelles for the DC–8, and 707 aircraft, it looks as though we can reduce the noise level of those existing aircraft down to a level of 100 decibels except for regions very near the airport. So this will be more than a factor of two—(cutting in half the area around the airport subjected to over 100 decibles)"

So said Dr. M. C. Adams, NASA's Associate Administrator for Advanced Research and Technology on March 11, 1968 before a Subcommittee of the House Committee on Appropriations.

In explaining the overall NASA aircraft noise research program, Administrator James E. Webb told the Subcommittee that NASA has completed much theoretical work on noise suppression of engines on current aircraft. Contracts, he noted, have been let with the Boeing and Douglas Companies, "to produce the equipment and modify the nacelles of the engines and do the flying. Now, that information comes back to us for application throughout the industry, so that we can help the FAA set standards, requirements, and regulations."

In his prepared statement presented to the Subcommittee, Mr. Webb stated that, " . . . fiscal year 1968 has involved the wind tunnel testing and design and testing of boilerplate nacelle modifications. In fiscal year 1969 the final nacelle configurations will be constructed for flight proof tests on a 707 type aircraft and on a DC–8 type aircraft.

As other parts of its aircraft noise abatement research program, Mr. Webb said, NASA is also conducting research in safe climbout and landing techniques for noise minimization, and development of a "quiet engine" program. Regarding the latter, Administrator Webb explained that, "In fiscal year 1968 preliminary work will be conducted to define the scope and some of the hardware components of a quiet research engine. The second phase of this proof-of-concept, to be implemented in fiscal year 1969, will include large scale engine component fabrication and full-scale tests of compressors and fans designed for minimum noise."

In further explanation of the "quiet engine" program Dr. Adams told the Subcommittee:

"In fiscal year 1969 we plan to let contracts for detailed designs and initiation of component fabrication for a quiet engine. We will carry out some component tests by 1970. We are working toward the integration of those components into an experimental engine for tests in 3 to 4 years."

RESOLUTION OF THE VILLAGE BOARD OF THE VILLAGE OF BENSENVILLE, ILL.

Whereas the Village of Bensenville, County of DuPage, is situated contiguous, to O'Hare International Airport; and

Whereas the Villiage of Bensenville has existed since 1884 prior to the placement of O'Hare International Airport; and

Whereas noise and air pollution from the aircraft using said airport continues to be a public nuisance of increasing intensity to the detriment of the well being of its citizens, and to the detriment of property values within the Village; and

Whereas there are pending in Congress of the United States bills known as H.R. 3400 and S.B. 707 which would regulate and abate aircraft noise, which would benefit the Village of Bensenville and its residents: Now, therefore, be it

Resolved by the Village Board of Trustees of the Village of Bensenville, Illinois, as follows:

Section 1. That the corporate authorities of the Village of Bensenville do hereby urge that the Congress of the United States quickly pass one or both of the aforesaid bills new pending in order that aircraft noise may be controlled and abated in all areas of the county, but especially within the Village of Bensenville where such aircraft noise has been and continues to be, with increasing intensity, a public nuisance and a detriment to property values.

Section 2. That this Resolution shall be in full force and effect from and after its passage and approval according to law.

Passed this 6th day of June, A.D., 1968.

Approved this 6th day of June, A.D., 1968.

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