

federal register

THURSDAY, DECEMBER 23, 1976

PART II



DEPARTMENT OF TRANSPORTATION

**Federal Aviation
Administration**

■

NOISE ABATEMENT OPERATING RESTRICTIONS

**Limitations for Certain Turbojets,
Propeller-Driven Small Airplanes, and
Agricultural-Operation and Fire
Fighting Propeller-Driven Aircraft**

Title 14—Aeronautics and Space

CHAPTER I—FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

[Docket Nos. 13582 and 14317; Amdt. 91-136]

PART 91—GENERAL OPERATING AND FLIGHT RULES

Subpart E—Operating Noise Limits [NEW]

PHASED COMPLIANCE WITH PART 36 NOISE LIMITS BY TURBOJETS WITH MAXIMUM WEIGHTS GREATER THAN 75,000 POUNDS

• The purpose of this amendment to Part 91 of the Federal Aviation Regulations (14 CFR Part 91) is to achieve further relief and protection to the public from aircraft noise by requiring certain previously excepted airplanes to meet present Federal noise standards in accordance with a phased time schedule ending on January 1, 1985. This amendment implements a decision, approved by the President on October 21, 1976, and announced in a comprehensive Aviation Noise Abatement Policy Statement issued by the Secretary of Transportation and the Federal Aviation Administrator on November 18, 1976. It extends current Federal noise standards to domestic commercial airplanes in not more than eight years from January 1, 1977. •

This amendment applies to U.S. registered civil subsonic turbojet airplanes with maximum weights greater than 75,000 pounds. It applies to airplanes with standard airworthiness certificates, if those airplanes are not engaged in foreign air commerce. For airplanes operated under Parts 121 and 135 of the Federal Aviation Regulations, dates for progressive fleet compliance with Part 36 are also prescribed in this amendment, as follows:

1. January 1, 1981, for at least one quarter of the four-engine airplanes with low bypass ratio engines.
2. January 1, 1981, for at least one quarter of the four-engine "pure jets."
3. January 1, 1981, for at least one half of all other airplane types.
4. January 1, 1983, for at least one half of the four-engine airplanes with low bypass ratio engines.
5. January 1, 1983, for at least one half of the four engine "pure jets."
6. January 1, 1983, for all other airplane types.

This document also contains a notice of FAA's decision not to prescribe operating noise limits for aircraft engaged in foreign air commerce (including operations under Part 129 of the Federal Aviation Regulations), or for airplanes weighing 75,000 pounds or less, at this time. This amendment is issued pursuant to § 611 of the Federal Aviation Act of 1958 (herein called "the Act").

While this amendment is expected to produce significant improvements in the noise environment at major airports, substantial local action will be necessary to complement the noise reduction actions of the Federal Government and air carriers. The only successful attack that can be launched on the overall problem of aircraft noise is one that involves the cooperative participation of all levels of

government, as well as airport operators, air carriers, manufacturers, and airport neighbors. The responsibilities of all of these parties are stated in detail in the "Aviation Noise Abatement Policy," (herein called "the Policy Statement") of November 18, 1976. That document is in the public rules docket for this amendment.

In addition to the Policy Statement, the FAA has issued a final environmental impact statement (EIS), dated November 10, 1976, concerning this amendment. This document (herein called "the EIS") has been placed in the public rules docket for this amendment. It contains detailed analyses concerning the need for this amendment and its estimated costs and benefits. The EIS contains a detailed listing of the affected civil turbojet fleet and fleet forecasts developed by the FAA. These data were used in the environmental and inflationary impact analyses supporting this regulatory action.

As stated below, compliance with this amendment can be achieved by the acoustical modification, or "retrofit," of noncomplying airplanes or through their replacement with complying airplanes. While the cost and benefit analysis in the EIS indicates that prolonged retention of certain aircraft would be uneconomical due to increased maintenance and higher fuel cost differentials, the replacement policy of individual operators will depend on their capital investment plans and financial capability.

It should therefore be stressed, at the outset, that the purpose of this amendment is not to force the retrofit of older airplanes, but rather to encourage each operator to adopt whatever means of achieving compliance is best suited to his individual economic situation. This may involve replacement of older airplanes by new technology airplanes, the retrofitting of his current fleet, or a mixture of these options. However, the FAA recognizes the advancements in energy efficiency, safety, noise reduction, and engine emissions that are offered by new technology airplanes. This amendment is intended to encourage the introduction of the newest generation of airplanes into the fleet as soon as practicable. To maximize the incentive to replace rather than retrofit older airplanes, this amendment provides for a carefully controlled and limited extension of the January 1, 1981, and January 1, 1983, compliance dates for operators who elect to replace these older airplanes with new airplanes that comply with Part 36.

At the direction of the President, the Secretary, on December 1, 1976, conducted a public hearing on the need for special financing measures to assure timely compliance with this amendment, with particular emphasis on the replacement of the older, noisier four-engine airplanes. The Secretary will make a recommendation to the President by December 31, 1976.

I. BACKGROUND: THE NEED FOR THIS AMENDMENT

The current U.S. fleet is comprised of some 2,100 large jet aircraft. Of these, 1,600 (about three-fourths) do not cur-

rently comply with Part 36 noise standards. It has been estimated that between 1,300 and 1,600 of these noncomplying aircraft would remain in service throughout the 1970s and possibly some 50 percent would be in service by 1990 if there were no Federal action.

In extending the Part 36 noise standards to airplanes currently in operation, the FAA is acting pursuant to section 611 of the Act, which directs the FAA to afford present and future relief and protection to the public health and welfare by the control and abatement of aircraft noise, after considering whether noise abatement regulations are consistent with the highest degree of safety in air commerce and are economically reasonable, technologically practicable, and appropriate for the particular type of aircraft. This amendment to the Federal Aviation Regulations is the result of several years of study of these factors by the FAA and consultation with the Secretary of Transportation and the Environmental Protection Agency (EPA) in order to assure the fullest possible consideration of the public health and welfare, safety, economic reasonableness, and technological practicability.

The FAA and other Federal agencies have been developing a comprehensive program to reduce public exposure to aircraft noise. In addition to FAA-sponsored research in reduction of turbomachinery noise through the use of sound absorbing materials (SAM), NASA has conducted a parallel program which included SAM, but also focuses on reduction of JT8D jet exhaust noise by redesign of the engine itself by increasing the engine bypass ratio through replacement of the two-stage fan with a larger diameter single-stage fan (refan). Complementing these programs in source noise reduction, FAA and NASA have also been examining the use of operational procedures for further reductions in noise. This amendment does not signify an end to this important research, which, with other related research, will continue in its effort to ensure the broadest possible attack on the aircraft noise problem.

As more fully discussed below in relation to public comments, aircraft noise is a significant annoyance for six to seven million persons in the United States. The problem is particularly serious at some of the major airports. It represents, moreover, a significant or potential problem for residents living near many other airports across the nation. Aircraft noise is a problem of national scope because a significant portion of the American people are affected by it at many locations throughout the country. Airplane noise is also a peculiarly local problem, varying substantially among airport communities depending on the air service provided, the type and frequency of operations, the airport design and geographical arrangement, the mix of equipment and route patterns, the numbers of people who live nearby and their reaction to aircraft noise, and the general compatibility of land use in the surrounding areas.

The aircraft noise issue became increasingly important in the early 1960s

as airlines introduced jet aircraft to their fleets. The rapidly increasing number of commercial jet operations in the latter part of the decade further increased the importance of this problem. Because of its adverse effect on people, noise was soon recognized as a major constraint on the further development of commercial aviation. The engine manufacturers and the Federal Government both engaged in extensive research into quieting jet engines. In 1968, Congress gave the FAA the responsibility to regulate aircraft design and equipment for noise reduction purposes, and the FAA then embarked upon a long-term program of controlling aircraft noise at its source.

Of the six to seven million persons subject to significant aircraft noise, approximately 600,000 reside in areas that are severely impacted. Severe noise impacts include disturbances of the normal activities of airport neighbors—their conversation, sleep, and relaxation—and degrades the quality of life. Based on an analysis of citizen and Congressional complaints, the imposition of airport use restrictions, litigation, and the number of persons affected, the FAA has identified many airports where noise is an issue. A 1974 Department of Transportation study of 23 major airports identified eight airports that have neighboring populations of over 25,000 residing within noise contours representing serious noise annoyance, and 13 airports with at least 100,000 persons residing within noise contours representing considerable noise annoyance. For the 23 airports surveyed, five million people live within these noise contours (described in the Policy Statement and EIS as noise exposure forecast (NEF) 30 and 40 contours). In addition, the Air Transport Association has identified many airports as "noise sensitive," including several not treated in the 23-Airports Study. The affected airports are identified in the Policy Statement.

As a result of the impact of aircraft noise on airport neighbors, serious pressures have developed that could threaten the continued growth of a healthy air transportation system. These pressures include restrictions on airport usage such as curfews, restrictions on the use of certain aircraft, opposition to airport development, and serious liability exposure for existing airports. For example, over the past five years, airport proprietors have paid out over twenty-five million dollars in legal judgments and settlements in noise related suits and have spent over three million dollars in legal fees and other legal defense costs. This is in addition to the monies being spent by airport proprietors in acquiring land adjacent to their airports and soundproofing affected buildings such as schools, residences, and public buildings.

The health of the air transportation system is inseparable from the health of the national airport system. There are now over 13,000 public airports operating in the United States. These airports vary widely in their size, closeness to populated areas, and aircraft mix. Some

of these airports are among the busiest in the world, with 84 airports having more than 200,000 annual operations, 160 airports having more than 150,000 operations each year, and well over 200 airports having more than 100,000 such operations. The busiest airports are generally located in the vicinity of the larger metropolitan areas, where the population is concentrated.

The critical conclusion coming out of the many years of FAA review of this problem is that, both from the standpoint of the quality of life in airport environments and from the standpoint of the preservation of a strong airport/air transportation system, Federal action is required to ensure that commercial aircraft comply with Part 36 noise levels within the next decade. The normal incentives of the private marketplace are not expected to achieve this. Fleet forecasts through the 1990's bear this out, as more fully discussed below. This amendment is essential to provide the catalyst, and the legal framework, for a comprehensive, cooperative effort by Federal, State, and local governments, by air carriers and manufacturers, and by airport neighbors, to achieve meaningful relief from aircraft noise and also preserve the strength of our vital air transportation and airport system.

II. HISTORY OF THIS AMENDMENT

1. Part 36 of the Federal Aviation Regulations "Noise Standards: Aircraft Type Certification" (34 FR 18355; November 18, 1969), which became effective December 1, 1969, originally prescribed noise measurement, noise evaluation, and noise level requirements for the issuance of type certificates, and changes to those certificates, for subsonic transport category airplanes, and for subsonic turbojet engine-powered airplanes, regardless of category. That regulation initiated the noise abatement regulatory program of the FAA under the statutory authority of Pub. L. 90-411 (July 21, 1968) which added section 611 to the Act.

2. On November 4, 1970, the FAA published Notice No. 70-44, an advanced notice of proposed rule making (ANPRM) entitled "Civil Airplane Noise Reduction Retrofit Requirements" (35 FR 16980). That ANPRM proposed the retrofitting of existing subsonic turbojet engine-powered airplanes to achieve compliance with Part 36 noise levels.

3. After considering the comments in response to Notice 70-44, on March 22, 1974, the FAA issued a notice of proposed rule making (Notice 74-14) entitled "Civil Aircraft Fleet Noise Requirements" (39 FR 11302; March 27, 1974). That notice proposed that civil subsonic turbojet engine-powered airplanes with maximum weights of 75,000 pounds or more be required to comply with Part 36 noise standards. Notice 74-14 contained proposals applying to civil subsonic turbojet engine-powered airplanes weighing 75,000 pounds or more, and operated under Parts 91, 121, 123, 129, and 135. Comments received in response to that NPRM have been care-

fully reviewed (together with comments in response to Notice 75-5, which is discussed below) in the issuance of this amendment.

4. On December 13, 1974 (39 FR 43422), the Council on Environmental Quality (CEQ) published in the FEDERAL REGISTER a notice of availability for public review and comment with respect to a draft environmental impact statement prepared by the FAA regarding the rule proposed in Notice 74-14.

5. On January 28, 1975, pursuant to section 611(c)(1) of the Act, as amended by the Noise Control Act of 1972 (Pub. L. 92-574), the EPA submitted to the FAA its recommended regulation to amend Part 91 to require all civil subsonic turbojet engine-powered airplanes, including those weighing less than 75,000 pounds, to comply with the noise standards of Part 36 before June 30, 1978. Accordingly, under section 611(c)(1) of the Act, the FAA published Notice 75-5, "Civil Subsonic Turbojet Engine-Powered Airplanes: Noise Retrofit Requirements" (40 FR 8218; February 26, 1975). On March 18, 1975, pursuant to a notice of public hearing (40 FR 8243; February 26, 1975), the FAA conducted a public hearing in Washington, D.C., to afford interested persons the opportunity to submit written and oral comments and present views, data, or arguments regarding the EPA-recommended regulation.

6. Pursuant to section 611(b)(1) of the Act, the FAA has consulted with the Secretary of Transportation and EPA prior to adoption of this amendment. Also, submission of this amendment to the EPA for review prior to its adoption was accomplished in accordance with section 309 of the Clean Air Act, as amended (42 U.S.C. 1857 h-7), and the guidelines of CEQ contained in 40 CFR 1500.9(b).

7. As discussed above, a final environmental impact statement, reflecting this amendment and the comments received on the draft EIS was issued on November 10, 1976, in accordance with the National Environmental Policy Act of 1969 and implementing guidelines of the CEQ, the Department of Transportation, and the FAA.

III. RELATIONSHIP TO PRIOR RULE MAKING

This amendment is an important part of the FAA's overall aircraft noise control and abatement program. The adoption of Part 36 in 1969 required new airplane types to be markedly quieter than the generation of turbojets developed in the late 1950's and early 1960's. Since the adoption of Part 36, the FAA has issued a number of notices proposing amendments to its provisions and, subsequent to notice and public procedure, has adopted those amendments which have been found to be consistent with the duties contained in section 611 of the Act. Those amendments have increased the protection of the public health and welfare by providing for the necessary control and abatement of aircraft noise and sonic boom. Further amendments

are currently under consideration by the FAA for future issuance.

In issuing amendments under the authority of section 611 of the Act, factors which the FAA must consider include the following:

1. Available data relating to aircraft noise, including the results of research, development, testing, and related evaluation activities.
2. The views and positions of other Federal, State, and interstate agencies.
3. Whether the proposed regulations are consistent with the highest degree of safety in air commerce and air transportation in the public interest.
4. Whether proposed regulations are:
 - a. Economically reasonable;
 - b. Technologically practicable; and
 - c. Appropriate for the particular types of aircraft, aircraft engines, appliances, or certificates to which they would apply.
5. The extent to which the proposed regulations contribute to providing protection to the public health and welfare by carrying out the purpose of section 611 of the Act.

Thus, in furtherance of its aircraft noise policy and its responsibility to issue appropriate rules for the control and abatement of aircraft noise and sonic boom, the FAA has adopted the following amendments to the FARs:

1. Amendment 36-1 (34 FR 18815; November 25, 1969) amended Appendix C of Part 36 regarding noise test procedures and standards, to ensure that the approach noise test is conducted with the aircraft in the configuration that is used for safety purposes during type certification and that the test conditions do not contribute to measured noise levels less than those generated in normal operation of the aircraft.
2. On March 28, 1973, the FAA published in the FEDERAL REGISTER an amendment to Part 91 (Amendment 91-112; 38 FR 8051) to prohibit unauthorized operation of civil aircraft at supersonic speeds over the United States.
3. Under Amendment 36-2 (38 FR 29569; October 26, 1973), the number of aircraft subject to Part 36 requirements was increased significantly. All subsonic turbojet-powered airplanes and transport category airplanes produced after January 1, 1974, including those produced under type designs certificated before the original Part 36 compliance dates, were required to comply with the noise level requirements of Part 36, regardless of the date of the type certificate.
4. In 1974, the FAA issued Amendment 36-3 (39 FR 43830; December 19, 1974) to increase the stringency of the conditions under which applicants for an acoustical change approval must show that issuance of authorization of type design changes of affected turbojet-powered airplanes and transport category airplanes would not result in an increase of takeoff or sideline noise levels of those aircraft.
5. Propeller-driven airplanes with maximum certificated weights less than 12,500 pounds were made subject to Part 36 noise requirements in late 1974, when

Amendment 36-4 (40 FR 1029; January 6, 1975) was issued. As amended, Part 36 prescribes noise standards and test procedures and conditions for new type designs of normal, utility, acrobatic, transport, and restricted category propeller-driven small airplanes. It also prescribes noise regulations for issuing standard airworthiness and restricted category airworthiness certificates for newly produced propeller-driven small airplanes and prohibits acoustical changes in type designs of those airplanes that would increase their noise level emissions beyond the prescribed limits.

6. Amendment 36-5 (41 FR 35053; August 19, 1976) amended provisions of Part 36 relating to noise type certification and acoustical change approvals in Subpart A and Appendices A, B, and C. Those amendments involved the technical procedures and standards for measuring and evaluating the noise emissions in the noise tests of civil subsonic turbojet-powered airplanes and transport category large airplanes.

7. Recently, based on its consideration of recommended regulations submitted to it by EPA under § 611(c)(1) of the Act, the FAA adopted certain amendments and issued notices of proposed rule making under section 611(b) of the Act. The FAA issued the following regulatory actions:

- a. Amendment 36-6 (issued December 17, 1976) amended the noise test provisions applicable to propeller-driven small airplanes. That amendment involved the noise measurement and evaluation provisions and the noise test engine power setting requirements in Appendix F of Part 36.
- b. The EPA-proposed rule contained in Notice 74-39 (40 FR 1061; January 6, 1975) also concerned noise test requirements and operating limitations for those propeller-driven small airplanes designed for agricultural or firefighting operation purposes and which do not comply with Part 36 noise limits. After due consideration of that proposal, the FAA concluded that an appropriate regulatory constraint on the operation of those airplanes was beyond the scope of Notice 74-39. Accordingly, the FAA has recently issued an NPRM which proposes to prohibit operation of those airplanes that do not comply with Part 36, except to the extent necessary to (1) accomplish the work activity directly associated with the special purpose for which the airplane is designed and (2) conduct certain other limited operations related to that purpose.
- c. Amendment 91-134 (41 FR 52388; November 29, 1976) amended Part 91 for noise abatement purposes to require that a pilot in command of a civil turbojet-powered airplane use the lowest authorized flap setting consistent with safety.
- d. After review of the EPA proposed rule contained in Notice 75-35 (40 FR 44256; September 25, 1975) regarding the use of reduced flap settings for noise abatement purposes, the FAA concluded that a regulatory action in addition to the amendment adopted in Amendment 91-134 should be considered for adoption.

Accordingly, the FAA issued Notice 76-26 (41 FR 52396; November 29, 1976) proposing an amendment to Part 91 to require that the landing flap setting for turbojet-powered airplanes be delayed until at or below 1,000 feet above the airport elevation, unless a landing flap setting at a higher altitude is necessary in the interest of safety.

IV. COMMENTS ON NOTICE NO. 74-14 AND NOTICE NO. 75-5

Interested persons have been afforded the opportunity to participate in this rule making by submitting comments to the regulatory docket for each notice and by participating in a public hearing on the matters contained in Notice 75-5. The written comments to the dockets and the written and oral presentations made at the public hearing, which were made a part of the docket for Notice 75-5, have been reviewed and all matters contained in those dockets have been considered in the issuance of this amendment.

While there are some significant differences between the proposals in Notice 74-14 and Notice 75-5, the major issues concerning the need for the further reduction of aircraft noise at the source and the means by which that noise reduction should be achieved, including the questions of when it should be accomplished, were raised in response to both notices. Over 800 comments were submitted to the two regulatory dockets. The two notices of proposed rule making attracted comments from a wide range of interests, including individual private citizens; citizen groups; airport operators and operating authorities; environmental interest groups; Federal, State, and local government bodies; foreign governments and entities; aviation trade/industry associations; domestic and foreign aircraft and aircraft engine manufacturers; and domestic and foreign aircraft owners and operators.

The comments focused on the following issues: the options or alternatives to the proposed rule making that might be available; the effects of aircraft noise on the public health and welfare, costs versus benefits, economic reasonableness, technological practicability, compliance dates, the need for tradeoffs, appropriateness to particular aircraft types; safety; impacts of the proposed rule on energy consumption and aircraft emissions; and miscellaneous issues. These comments are discussed below.

A. ALTERNATIVES TO THE PROPOSED REGULATION

Virtually every commenter expressed support for the goal of aircraft noise reduction or, more particularly, the need for appropriate action to abate the impact of noise annoyance in the airport environment. In responding to the issues involved in the proposals contained in the notices, many commenters recognized the broader issues of aircraft noise control going beyond source noise reduction. Some discussed the various methods which may be used to achieve noise relief and reduce noise impact on the community. Thus, the docket contains suggestions of noise control actions that

were alternative or supplemental to those proposed in the notices. Many of these suggestions were beyond the scope of the notices, such as suggestions for specific flight procedures. Other alternatives that were suggested included matters beyond direct FAA control, such as land-use controls.

The FAA agrees with those commenters who recognize that this rule-making action will not eliminate the aircraft noise problem. However, the FAA also agrees with many commenters that this amendment is a necessary step towards achieving appropriate reductions at the noise source and will contribute to making aircraft and airports more compatible with the communities they affect. As many commenters noted, a comprehensive program involving many levels of government and combining numerous noise control and abatement techniques is needed to achieve the necessary protection to the public health and welfare. A discussion of these other noise reduction techniques is contained in the EIS and Policy Statement.

The FAA does not agree with those commenters who believe that the use of specific noise abatement operating/flight procedures, or combination of procedures, would provide the necessary noise control and abatement. Further, some commenters mistakenly believed that using an operational procedure during the flight of a noncomplying aircraft can serve as a substitute for compliance with Part 36. While some procedures help to minimize the generation or the propagation of noise from the aircraft in flight, their benefits to the public health and welfare are most significant when combined with other effective techniques, such as the source noise control that results from compliance with Part 36. Operational procedures are not a substitute for, but complement, limitations on source noise generation.

Some commenters, particularly some aircraft owners and operators, suggested that the FAA should permit the use of noise abatement operating procedures as an alternative to compliance with source noise limits. The FAA notes that it has consistently supported the use of those procedures that are in conformity with the safe and efficient use of the navigable airspace and do not otherwise adversely affect safety. The significance of terminal area procedures and other airport noise abatement techniques is discussed in the Policy Statement. Several commenters recognized that, unless future reductions in aircraft noise emissions at the source completely satisfy the need for protection of the public health and welfare, supplemental action by aircraft and airport operators and state and local governmental entities will continue to be needed. The FAA agrees. However, the FAA believes that the fact that non-Federal action is necessary is not a justification for delaying strong Federal action to bring about that part of the overall solution that is within Federal control. Some commenters opposing adoption of the proposed rules pointed

to local airport measures as alternative means of achieving noise control. Since many of these matters are within the authority and control of the local community, the FAA cannot ensure that they will be acted upon. The FAA agrees with those commenters who stress the important role of aggressive local action, including planned airport development, zoning and related land-use controls, and the use of sound suppression materials in certain buildings in achieving the desired reduction of aircraft noise impact on local communities. However, the FAA does not agree with the suggestion by some commenters that the noise impacted communities should bear the full burden of reducing aircraft noise around airports. As previously stated, the cumulative effect of the various components of a comprehensive noise program is, and is expected to continue to be, necessary to achieve the required protection to the public health and welfare. This amendment is a significant Federal contribution to that comprehensive program.

B. IMPACT ON THE PUBLIC

The disruptive effect of aircraft noise on the quality of life, and on the air transportation system, has been outlined above and is discussed in detail in the Policy Statement and EIS. Public comments fully support FAA's conclusions concerning the impact of aircraft noise on the public.

As previously stated, virtually every commenter to the two dockets and each participant at the public hearing expressed support for the goal of aircraft noise control and abatement. Private citizens; citizens groups; Federal, State, and local authorities; and in particular, airport operators and proprietors stressed the need for present, as well as future, aircraft noise reduction requirements. The noise of air carrier aircraft, that is, the heavier turbojet-powered airplanes, was cited as a principal target for such reductions by many commenters. The FAA agrees that available technology must be applied in the further reduction of noise of those aircraft. This amendment accomplishes that result consistent with the considerations listed in section 611(d) of the Act.

More than 500 comments cited the need for significant and immediate relief from aircraft noise. Many commenters furnished graphic descriptions of the annoyance and disruption of their lives caused by unacceptably high levels of aircraft noise. Most of these commenters urged, and many demanded, that the FAA immediately adopt the proposed rules but with compliance sooner than that proposed. Educators, students, nurses, doctors, and others involved in noise-sensitive activities that are routinely affected by the sound of aircraft expressed their personal concern with the disturbance of noisy aircraft. The FAA agrees that the proposed operating noise limits are needed and must be issued at this time. Further the compliance dates for accomplishing those reductions

should be set at the earliest date consistent with the statutory duty to consider economic reasonableness, technologically practicability, and flight safety. This amendment achieves that result.

The FAA agrees that since economically reasonable technology is currently available for, and is employed on, new production aircraft of the same basic type designs as certain older aircraft in the existing fleet, there remains no justification for not requiring the use of that noise reduction technology on older models of similar aircraft types if the operators of these older airplanes elect not to replace them with new technology airplanes. However, this has not been shown to be the case for the smaller turbojet types, as discussed below with respect to airplanes weighing 75,000 pounds or less.

The public comments regarding the perceived impacts of aircraft noise have been reviewed and were found to be useful and informative. Those comments have assisted the FAA in determining, after due consideration of all comments, that the economic impacts imposed by this amendment are reasonable and appropriate in relation to the benefits to be achieved. These costs and benefits are discussed below.

C. IMPACT ON THE FLEET: COSTS AND BENEFITS

Many comments were received concerning the economic impacts of the proposed rules on aircraft operators and whether or not these impacts would be justified in terms of the noise reduction benefits to be obtained.

The comments addressing economic impact concentrated on the following issues: costs of retrofit, re-engining or replacement, technological practicability, refan availability, tradeoffs, appropriateness to particular airplane types, and compliance dates.

With respect to cost impacts, comments indicated that "hush kits" have substantial cost elements since (1) they are expensive to manufacture and install, (2) they cause weight and performance penalties leading to increased fuel usage and operating costs, and (3) they deflect expenditure from new, quieter airplanes, which retards the ultimate introduction of appreciably quieter new airplane types. The FAA has fully reviewed these factors and believes that the regulation, as issued herein, adequately accounts for these cost elements. Economically reasonable retrofit hardware is available for many airplane types. While there will necessarily be costs associated with the manufacturing and installation of retrofit hardware, these costs, as discussed more fully below and in the EIS, are considered by the FAA to be reasonable, particularly when considered in relation to the resulting noise reduction benefit which improves the quality of life and provides relief and protection to the public health and welfare from aircraft noise. The compliance dates and replacement plan provisions of this amendment permit adequate fleet plan-

ning to prevent premature investment in marginally effective retrofit technology and allow the phasing in of the most advanced new airplane types to replace airplanes that are becoming economically obsolete.

One comment highlighted the vulnerability of airplane operators to supply problems involving manufacturers. For example, it was stated that a prime supplier of quiet nacelle kits has ceased all kit production because of poor market conditions and that the production rate will only be known when the size and timing of the market is known. Problems associated with the production of critical forgings and other tooling equipment were also stressed. This planning problem was stated to be further confused by such unknowns as customer order size, time of production, and the inflation rate. The FAA believes that the planning time furnished in this amendment, and the flexibility that it allows, coupled with the certainty of the requirement for Part 36 compliance, will provide a firm planning basis for defining the retrofit market, establishing production schedules, and developing the best compliance options for each operator who elects not to replace older airplanes.

Several comments were received indicating that certain airplane types, such as the older four-engine axial flow turbojets, could not economically be brought into compliance. The issue raised by this objection is whether or not replacement of a noncomplying airplane type by a complying airplane type should be required where the cost of aircraft modification may be great in relation to the value of the airplane being modified. The FAA believes that, since unrestricted use of noncomplying airplanes lessens the public benefit resulting from compliance by other portions of the total fleet, replacement or retirement of these airplanes should be required, within reasonable time limits. Much attention has been given to such factors as airplane useful life, amortization, depreciation, and ultimate replacement. Because of the ample lead times in this amendment, including the replacement plan provisions, economically reasonable options are afforded by this amendment.

A somewhat contradictory pattern of comments emerged. Certain comments argued that no firm dates could be set because of the many variables involving retrofit kit production, and stated that no time limit could be established until the FAA obtains "guaranteed" dates from the manufacturers. Another line of comments stated that, while the dates proposed were too restrictive, the establishment of firm dates is essential to begin the procurement, production, and distribution processes necessary for effective fleet noise reduction. Both of these arguments appear to have merit. This amendment therefore accommodates both the need for maximum industry initiative and the need for a firm compliance schedule. This is done by permitting operators to obtain approval of replacement plans.

This is consistent with the primary goal of this amendment which is to extend the noise standards of Part 36 to the currently operating fleet of heavy turbojet airplanes while at the same time allowing the flexibility necessary to permit operators to purchase new technology airplanes where that option is superior to the modification of older airplanes. A recent NASA study has shown that substantial long-term (through the year 2000) reductions in noise, fuel consumption, and air polluting emissions are achievable through the development and introduction of more advanced technology than that currently available. The FAA believes that the greatest benefit to the public that could flow from this amendment would be the encouragement of aircraft operators and manufacturers, working together, to accelerate the growth and application of this new technology.

Many comments to Notice 75-5 stated that the dates proposed in the notice could not be met and must be relaxed. These comments furnished detailed information on the fleet-by-fleet timing problems involved in retrofit. This information indicated that it was not feasible to comply with the proposed rule by June 30, 1978, even if all retrofit type design changes had already been certificated. It was estimated that up to 30 months would be needed for availability of the first kit after receipt of the purchase order. Two to three months more time was urged as being essential to permit responsible decisions concerning the placing of purchase orders with manufacturers. For aircraft for which retrofit type design certification, production engineering, and tooling have not been accomplished, time frames in the order of three years were estimated before significant kit production rates could be achieved, with more time being estimated for total fleet compliance for these airplane types. Similar timing problems were stressed with respect to the replacement of older airplanes with newer airplane types.

Comments were received concerning the impact of the proposed compliance dates on foreign operators. For reasons discussed in Section IV below, the FAA has determined that a regulation should not be prescribed for foreign operators at this time.

One comment pointed out that the only retrofit kits that might be developed within shortened production schedules would have unacceptable losses in thrust and increases in fuel consumption. The FAA is particularly conscious of the secondary impacts that noise abatement type design decisions may have on safety, performance, and fuel consumption throughout the remaining useful life of an airplane. The dates prescribed in this amendment are selected to permit the development, marketing, and incorporation of hardware that is optimal in all of these respects for operators electing not to replace their older airplanes.

Strong public comment was received urging that there be no slippage in the

proposed dates. Concern was expressed that the arguments in favor of further delay had run their course, were no longer valid, and should no longer be controlling. It was stated that the public interest requires that the proposed dates be met regardless of cost to the airlines. Other comments recognized the need to consider economic and technological factors in arriving at these compliance dates, but argued that the proposed dates adequately accounted for those factors and should be preserved.

The great volume of written and oral comment received in the docket and at the hearing has provided a clear perspective on the magnitude of the problems involved in overall fleet compliance with Part 36. The cumulative impacts of the proposed compliance dates on prototype testing—and construction, certification testing, production engineering, materials availability, procurement by operators, delivery, and aircraft modification and downtime scheduling have been reviewed. In the preproduction phase, for example, an engine manufacturer indicated that a critical timing constraint on the production of retrofit kits is the extremely limited forging press capacity of his supplier, and the time (estimated as four years) required for this supplier of aluminum forgings to increase his production capacity. In summary, the information received in response to the notice clearly showed the extent to which the aircraft operator, who is the regulated person, is at the end of a long and complex chain of production stages over which he has no direct control and involving suppliers whose schedules and marketing patterns are beyond FAA regulatory control. The compliance dates in this amendment reflect this.

Each potentially viable option for accelerating total fleet compliance with Part 36 has been considered in its relation to the factors discussed above. Where possible, separate compliance schedules have been established in this amendment to accelerate compliance by different segments of the fleet. However, consistent with the duty specified in section 611(d) of the Act, the FAA does not believe that the total elimination of non-complying airplanes, by retrofit, replacement, or retirement, can reasonably be mandated in less than the time permitted under this amendment.

Several comments stressed the development of refan technology as a superior alternative to retrofitting with quiet nacelle treatment. These comments urge that the FAA not force the premature incorporation of quiet nacelle treatment and then require a later retrofit to incorporate refan technology. These comments pointed out the wasted resources that would result from such a double retrofit. The FAA agrees in part with these comments. The lead times in this amendment, and its provision for approval of alternate compliance plans, are intended to encourage and facilitate the most flexible compliance programs consistent with the clear public need for a firm schedule of compliance. However, it should be pointed out that the noise

limits in this amendment will be continuously reviewed, and noise reduction technology assessed, to determine whether lower noise limits should be prescribed in the future. Therefore, compliance with this amendment should not be regarded as assuring that no further retrofit or airplane replacement will be required in the future.

Many comments were received concerning the proposal to require all operators to comply with Part 36 without "tradeoffs." (Under the "tradeoff" provisions of Appendix C of Part 36, the applicable noise limit may be exceeded at one or more measuring points (e.g. takeoff or approach) if that exceedance is offset by a noise level at another measuring point, such as sideline, that is sufficiently below the applicable limit.) These comments pointed out that current regulations permit the issuance of standard airworthiness certificates to newly produced airplanes of older type designs that use the tradeoff provisions of Part 36 to show compliance with that part. It was stated that an anomalous situation would be created if an airplane certificated using tradeoffs were not permitted to operate unless recertificated without tradeoffs. This same argument was raised concerning airplanes voluntarily brought into compliance with Part 36 prior to the issuance of operating noise limits. The FAA agrees with these comments. For airplanes that were in compliance with Part 36 prior to January 1, 1977, this amendment does not require recertification to Part 36 requirements without tradeoffs. This is also the case for airplanes that are shown (before or after January 1, 1977) to comply with Part 36 for the original issuance of a standard airworthiness certificate. For both classes of airplanes, the FAA believes that the increment of further noise reduction to be achieved by recertification does not justify the imposition of recertification costs.

Other comments argued that the older class of turbojets that have never been in compliance with Part 36 (i.e., those that were not designed or produced under Part 36 requirements or voluntarily brought into compliance with that part) should not be required to comply with Part 36 without tradeoffs when the newer technology airplanes may use tradeoffs. The FAA disagrees. Unlike the two cases discussed above, which involve airplanes for which a no-tradeoff requirement would involve recertification, it has been determined to be cost effective, for certain airplane types, to apply full acoustical treatment to reduce the high noise levels of previously noncomplying airplanes all the way down to compliance with Part 36 without tradeoffs. In many cases, the technology is already available. In other cases, it is expected to be available in sufficient time to permit compliance within the dates prescribed in this amendment. The degree of noise reduction this technology offers to noncomplying airplanes warrants the cost of a single retrofit requirement that does not permit tradeoffs to be used. The FAA

recognizes, however, that certain of these older noncomplying airplanes either cannot comply with Part 36 without tradeoffs under any circumstances, or cannot comply at certain high weights. For those airplanes, this amendment permits the approval of the use of tradeoffs if the operator shows that, after full application of existing retrofit technology, the use of tradeoffs is required for compliance with Part 36.

In addition to the numerous comments addressing the costs that would result from the proposed regulation, many comments concerned the benefits to be expected from the rule. Several comments pointed out that complete resolution of the airport noise problem requires that state and local governments take aggressive action to achieve land-use compatibility around airports. The FAA agrees. The noise limits specified in Part 36 are the lowest noise levels that can be achieved, at the source, through reasonable application of available noise reduction technology. As stated above, the noise levels specified in Part 36 represent a significant improvement in source noise reduction, but complementary action by state and local governments, including airport proprietors, is a vital part of the overall solution to the airport noise problem.

In addition to comments relating the effectiveness of source noise reduction to the effectiveness of land-use controls, several comments addressed the direct benefits of the source noise limits as proposed. One comment stated that, if quiet nacelle treatment were required too early, this would so damage the economic condition of one carrier that it would be forced to leave older, noisier, less efficient airplanes in service and delay the return to service of wide-bodied airplanes that were removed from service because of poor market conditions. The FAA has made every effort to ensure that this amendment will not have the counterproductive effect of extending the life of older airplanes and retarding the entry of new technology airplanes into service. As stated above, the lead times and replacement plan approval provisions in this amendment are intended to permit phased replacement of airplanes and not force the retrofitting of older airplanes to the exclusion of more effective options.

Several commentators stated that the actual perceived noise reduction from quiet nacelle retrofit is minimal and should not be required. The FAA disagrees. In terms of total fleet noise reduction, the FAA believes the requirement to achieve compliance with Part 36 will result in significant source noise reduction, and that the retrofit technology that is available for certain older airplanes will provide an important part of that overall fleet noise reduction. The FAA has given particular attention to detailed comments stating that there is no solid evidence that quiet nacelle retrofitting provides economically justifiable public health and welfare benefits. One of these comments concluded that it would be a misappropriation of financial

resources to impose the burden of retrofit for so little benefit. Three conclusions are reached by the FAA in response to this comment. The first is that compliance with Part 36 through retrofit will result in significant noise benefits. Second, a firm noise ceiling, applicable to all heavy turbojets, will greatly assist state and local governments in adapting local land use to firm source noise levels. The third conclusion is that, because it encompasses both replacement and retrofit, this amendment permits the option selected by an operator to be the most cost effective means for bringing his fleet into compliance.

As a result of combined government and industry research, a safe and practicable application of acoustic technology has been developed and tested that will allow turbojet airplanes certificated prior to the adoption of Part 36 to be modified to comply with that part while maintaining full compliance with applicable airworthiness standards. The FAA, through cost-sharing contracts with industry, sponsored development of technology for acoustic treatment of engine nacelles and fan ducts of JT3D engines with sound absorbing materials (SAM), and demonstrated that it is technically feasible to modify engine/nacelle components to comply with Part 36 with airplane configurations that could be approved for air carrier operation. Under one contract, flight testing of a JT3D powered B-707 with quiet nacelles has shown the applicability of this treatment to the JT3D in a manner achieving compliance with Part 36 for these aircraft. Studies comparing the DC-8 with the B-707 indicate the general manner in which the DC-8 could also be modified to comply with Part 36 consistent with the highest degree of safety.

With regard to other aircraft types affected by the regulation, a modification to enable early production B-747's to comply with Part 36 has been approved and is available. Similarly, JT8D powered B-727, B-737, and DC-9 airplanes are being produced in configurations that comply with Part 36. This technology is appropriate for modification of previously manufactured airplanes of these types.

Appendix D of the EIS contains a detailed study of the noise reduction benefits of aircraft modifications under this amendment. It indicates that reductions at the Part 36 measuring points ranging up to 14 EPNdB will be achieved for a number of air carrier airplane types. The technological alternative of airplane modification has been thoroughly examined. The FAA has determined that SAM nacelle treatment will result in a degree of reduction of airplane noise levels that can significantly reduce annoyance. With respect to takeoff noise, for example, the absolute magnitude of the reduction in effective perceived noise decibels (EPNdB) ranges from 13 or 14 for JT3D powered airplanes, 4-6 for JT8D powered airplanes, and 3 for JT9D powered airplanes. Appendix F of the EIS discusses the subjective effects of

such noise reductions. In a letter to the FAA, referring to the above noise reductions for JT8D powered airplanes, members of The Committee on Hearing and Bioacoustics of The National Research Council of The National Academy of Sciences and The National Academy of Engineering stated:

We believe that [these] noise reductions in aircraft noise level represent significant and beneficial improvements, which will provide meaningful and perceivable relief to airport neighbors. Recent research has indicated clearly that aircraft noise reductions on the order of 6 EPNdB are quite apparent to residents near airports and result in substantially less annoyance to those residents.

So far as cumulative noise exposure reductions are concerned, the data from the 23-Airport Study have been used by the FAA to model the effect of compliance with this amendment on a national basis. As described above, it is estimated that there are 6 million persons residing on 1,500 square miles exposed to cumulative noise levels of NEF 30 or higher and one-half million persons residing on 150 square miles exposed to NEF 40 or higher. These noise exposure levels range from substantial to very serious in terms of their adverse effect. The FAA estimates that compliance with this amendment will, by 1985, shrink the NEF 30 contours away from approximately 2.5 million persons, and the NEF 40 contours away from approximately 130,000 persons, if replacement of JT3D powered airplanes (i.e., the B-707 and DC-8) is extensive.

Under the regulatory reform policies of the Secretary and the Administrator, a comprehensive analysis of the costs and benefits of this amendment has been completed. The details of this study are shown in the Policy Statement and the appendices of the EIS, particularly Appendix D. Viable combinations of retrofit and replacement are analyzed. This study considered not only the above discussed noise benefits, but also the achievement of other important national objectives. These included the energy conservation benefits of improved fuel efficiency, the increasing importance of aeronautical exports to the national economy, the declining role of aerospace research and development as a percentage of national defense and NASA outlays, the stimulation of employment in the aerospace and related industries, and the advantages to the consumer of more advanced aircraft design and lower operating costs. Based on forecasts of aviation growth, the airport noise problem is expected to increase in the future despite the voluntary introduction of quieter aircraft. Between 1975 and 1990, annual air carrier operations are expected to increase to a degree that would create additional noise exposure which, without Federal action such as this amendment, could more than offset the reduction of noise resulting from the voluntary introduction of quieter airplanes.

The FAA has determined that this amendment is economically reasonable in its impacts. Modification of all affected aircraft would result in an investment

cost over the eight-year period of some \$700 million and an additional \$250 million in operating costs. (This is equivalent to the information in the EIS, in connection with the cost/benefit analysis, which is expressed in terms of discounted values.) On a comparative basis, the increased outlays associated with these capital and operating costs represent less than 2 percent of estimated passenger and cargo revenues over the same time-frame. This is not more than \$1.20 on the average 1975 domestic trunk airfare (which was approximately \$60.00). Appendix D of the EIS describes the potential costs of this amendment more fully. In addition to the conclusion that the costs of this amendment are not excessive, the FAA also concludes, on the basis of its analysis of costs and benefits, that these costs are amply justified in terms of the significant noise reduction benefits of this amendment as also discussed in Appendix D of the EIS.

An important adjunct of the overall cost/benefit study was the possible impact of this amendment on inflationary forces in the national economy. Appendix C of the EIS contains this study, including unit cost estimates, effects on supplying industries, the economics of aircraft manufacturing, and employment impacts. The conclusion of this study is that, for all viable compliance options, the total cost of compliance will create additional direct and indirect demands on the supplying industries of 1.5 percent or less of projected output in any year, and that the modification and replacement programs will, at most, raise industry output to its peak 1968 levels. It was also concluded that there should not be any pressure on wages in particular professional or labor occupation groups. It is concluded that no identifiable inflationary pressures on wages or prices are expected through the issuance of this amendment.

In summary, after consideration of all of the issues discussed herein and in the Policy Statement and the EIS, the FAA has determined that this amendment is economically reasonable, technologically practicable, and appropriate to the particular airplane types to which it applies.

D. SAFETY

Responding to the EPA proposal, one commenter stated that sufficient research has not been conducted to determine the effects that retrofitting with currently available technology may have on the safety of flight of small business jets. That commenter opposed a requirement to retrofit those airplanes on grounds that adequate research has not been conducted.

Other commenters stated that adequate deicing systems for SAM treated engine nacelles are not available and that retrofit may require a change in fire detection and fire extinguishing procedures.

The FAA agrees that the noise levels in Part 36 should not be made applicable to civil subsonic turbojet engine-powered airplanes with maximum weights of less than 75,000 pounds at this time. Evaluations indicate that technology is not cur-

rently available to justify applying such a requirement across the board to all aircraft in this class. However, the FAA will continue to evaluate this matter and may propose, at a later date, that Part 36 noise requirements be made applicable to those airplanes, if appropriate technology becomes available and is shown to be economically reasonable and acoustically effective. This is more fully discussed below.

With regard to the comments concerning deicing systems and fire detecting and extinguishing systems, it should be noted that these matters will be given full consideration during certification tests and that safety will not be compromised.

A question was raised concerning the safety of an inlet ring in some of the SAM designs. The use of inlet rings on the affected aircraft configurations has been investigated from the standpoint of safety, and it has been determined that designs can be developed that will meet applicable airworthiness requirements.

In conclusion, the FAA emphasizes that, for the aircraft covered by this amendment, compliance with the requirements set forth in this amendment can be achieved in a manner consistent with the highest degree of safety.

E. ENERGY AND AIR QUALITY

Although there are several ways to achieve compliance with this amendment, most commenters critical of the proposals discussed problems associated with retrofit. In this connection, nearly all of those commenters asserted that retrofit would result in a substantial increase in fuel consumption. One commenter asserted that retrofit would derivate efforts currently being made to reduce petroleum consumption. Others estimated that the increase in fuel consumption would result in substantially higher operating costs.

The FAA disagrees with these comments. Extensive engine performance tests have been conducted to evaluate the effects of retrofit. These tests indicate that retrofitting the affected airplanes would result in a maximum of one percent increase in fuel consumption for most airplanes. This increase would constitute an 0.67 percent increase in air carrier fuel use, or an overall 0.43 percent increase in use of aviation fuel if the annual fuel consumption of all aircraft is considered. Moreover, aviation fuel consumption amounts to only 13 percent of the total consumption of fuel in the United States for transportation purposes. Energy expended on transportation constitutes approximately 24 percent of the total consumption of energy in the United States each year. Based on these statistics, retrofit would increase total energy consumption in the United States by no more than 0.013 percent annually. Accordingly, the FAA concludes that only minimal fuel consumption increases will result from retrofit modifications.

In addition, based on evaluations conducted, the FAA concludes that emissions from retrofitted airplanes will have a

negligible effect on air quality and will comply with emission standards established by the EPA. Since the modifications involved in retrofit would not involve changes to the combustion chambers, no fundamental change in the emission generation process is expected. No changes in thrust are expected during idle and taxi. Therefore, emissions associated with ground operations, which are the most critical with respect to the airport impact on air quality, are not expected to be changed.

By the compliance dates specified, it is reasonable to expect that some attrition will reduce the number of aircraft that might have had to be retrofitted if compliance with Part 36 were required at the present time. Based on such considerations, operators may elect to retire, rather than retrofit, some of those airplanes before the compliance dates, or may choose to replace others with new technology aircraft before that date. One result of such decisions would be smaller energy consumption increases attributable to retrofit.

Therefore, the FAA concludes that requiring the airplanes specified in this amendment to comply with Part 36 noise requirements by the dates prescribed, in addition to being necessary to protect the public from aircraft noise, will have a negligible effect on energy consumption and air quality.

F. MISCELLANEOUS

A number of comments contained observations regarding certain legal aspects of the proposals. In this connection, one commenter stated that the FAA should be concerned with the noise reduction of military aircraft.

Section 611, which sets forth the noise abatement duties of the FAA, is in Title VI of the Act, which title authorizes the regulation of civil rather than public (including military) aircraft. Under that title, the FAA is not authorized to prescribe noise regulations controlling the design of military or other public aircraft.

Another comment stated that it would be arbitrary and discriminatory to apply the requirements of Part 36 only to airplanes with maximum weights greater than 75,000 pounds. This comment stated that such a weight distinction would unfairly burden the operators of the heavier aircraft as compared with the operators of lighter aircraft that are in direct competition with them. This weight distinction has been utilized in this amendment to identify those aircraft for which replacement or modification has been determined to meet the economic and technological considerations specified in section 611(d). For smaller airplane types, an across-the-board noise limit has not been shown to be economically reasonable, or technologically practicable at this time.

Finally, one commenter expressed concern that inspection and routine maintenance may become more difficult if retrofit is used to meet Part 36 requirements. That commenter cited as a particular problem the need for a hoist to remove

the heavy nacelle lining of one type of airplane. The FAA notes that the SAM retrofit kit was designed to minimize the difficulties associated with the normal maintenance of aircraft engines. Moreover, it should be further noted that a hoist already is employed for routine engine removal and replacement.

VI. NOTICE OF DECISION NOT TO PRESCRIBE CERTAIN AMENDMENTS

Under section 611(c)(1)(B) of the Act, if the FAA elects not to prescribe an amendment in response to an EPA proposed regulation, the FAA must publish in the FEDERAL REGISTER a notice that it is not prescribing a regulation based on that proposal. In two respects, the FAA has elected, after comprehensive review, not to prescribe part of the regulation as proposed by EPA at this time. These involve the applicability of operating noise limits to airplanes engaged in foreign air commerce and to turbojets with maximum weights of 75,000 pounds or less.

A. AIRPLANES IN FOREIGN AIR COMMERCE

Under proposed § 91.301(b) in Notice 75-6, the noise requirements of Part 36 would be applicable to a civil subsonic turbojet engine-powered airplane having a foreign registration certificate.

Notice 74-14 contained an extensive discussion of the factors that must be considered in determining whether Part 36 noise requirements should be made applicable to foreign registered aircraft. In this connection, the FAA stated that "it is preferable that environmental problems affecting international civil aviation, like other aviation problems affecting more than one nation, be resolved by the International Civil Aviation Organization" (ICAO). On the other hand, the FAA observed that "equal and non-discriminatory application of economically reasonable noise standards, to all operators, is an appropriate noise regulatory policy." While the notice proposed that Part 36 requirements be made applicable to foreign registered aircraft, the FAA stated that it would carefully review comments received from foreign and U.S. operators before taking any action on that proposal.

Several commenters expressed support for a proposed rule that would make Part 36 requirements applicable to those airplanes. However, comments received from nearly all foreign operators and governments and international airline groups expressed opposition to that proposal.

Most commenters opposing the proposal criticized the taking of unilateral action by the United States. In this connection, many of these commenters expressed their belief that noise standards affecting foreign operators should be developed in the ICAO forum. One commenter stated that the Council of ICAO has emphasized the need for all member states to refrain from unilateral action. The same commenter also observed that the ICAO Committee on Aircraft Noise has recorded the view that states should not apply national regulations to aircraft

of other states without a prior bilateral or multilateral agreement. Others recommended negotiations to arrive at such agreements, stating that unilateral action is not in accordance with accepted international practice and not in the best interest of aviation. Noting that technical capabilities and environmental needs vary among nations, another commenter argued that a lack of formal international policy consistent with these considerations will lead to the enactment of conflicting unilateral requirements and perhaps to unmanageable international problems.

Comments cited Annex 16 to the Chicago Convention as the basis for their opposition to unilateral action. One commenter stated that tradeoffs should be allowed for retrofitted aircraft in accordance with Annex 16. That commenter contended that it would be extraordinary and unsatisfactory if an aircraft were not allowed to operate into and out of the United States, even though fully complying with that Annex and allowed to operate into and out of other ICAO member states. While observing that the standards of Part 36 are more severe than those of Annex 16, another commenter objected to the international application of Part 36 stating that the United States was a party to the introduction of Annex 16.

Other commenters based their objections on considerations of basic fairness. Several observed that foreign operators would be compelled to convert their entire fleets to comply with Part 36 requirements even though the modified airplanes would only infrequently serve U.S. airports. One commenter asserted, in essence, that operations into and out of the United States by foreign registered aircraft are minimal when compared to total U.S. operations, and that if foreign aircraft were subjected to Part 36 requirements, the benefit to the U.S. public would be insignificant.

Some commenters addressed the economic and technological considerations that would be involved if foreign registered aircraft were required to comply with Part 36. In this regard, one such commenter stated that certain aircraft operated into the United States can, after being retrofitted, meet current Part 36 requirements if tradeoffs are allowed. However, it was stated that other aircraft could meet ICAO Annex 16 noise levels but could not meet Part 36 noise levels even if Part 36 tradeoffs are permitted. Another contended that "hush kits" do not currently exist for some of its aircraft and that it cannot foresee their availability. That commenter further contended that retrofit for those aircraft could probably never be accomplished economically and that expensive re-engineing is not a feasible alternative.

Finally, one commenter asserted that foreign registered aircraft should not be affected by the proposal until basic environmental data is presented to show the need for such action.

The FAA believes that these issues are best resolved, in the first instance, at the international level. The importance of

international negotiation is stressed in the "International Air Transportation Policy of the United States," issued by the President on September 8, 1976. As stated in that document (and in the November 18, 1976, Policy Statement), the United States encourages agreement on international environmental issues through the ICAO forum where consistent with domestic legal requirements. This policy is intended to promote equal treatment for foreign and domestic carriers through international regulations and preclude any unwarranted economic advantages or disadvantages for competing carriers which would be created in a world air transportation environment characterized by diverse national noise requirements.

Under this policy, every effort will be made to obtain ICAO agreement on application of noise standards for existing aircraft in international operations. If it proves impossible to obtain international agreement on adequate aircraft operational noise standards, the United States, as discussed below, will develop U.S. national standards, applicable to airplanes engaged in foreign air commerce, in order to protect public health and welfare.

ICAO currently is studying noise reduction modifications with the aim of achieving an international agreement on that subject. In light of this and the potentially disruptive effect that action by the United States at this time could have on the orderly development of international noise abatement standards, which could benefit many nations, the FAA believes that it would be inappropriate at this time to make Part 36 requirements applicable to foreign registered aircraft. However, as stated in the Policy Statement, the United States will seek early agreement through ICAO on operational noise standards and an international schedule for compliance with Annex 16 or Part 36. If such agreement is not reached by January 1, 1980, the FAA will taken regulatory action to require all airplanes engaged in foreign air commerce to comply with Part 36 or Annex 16, during the period ending on January 1, 1985, at a phase rate of compliance similar to that established for domestic operations. The requirements ultimately applied to U.S. international flag carriers will not be more stringent than those applied to foreign air carriers, since this would place these U.S. air carriers at an economic disadvantage if they had to comply with noise standards more restrictive than those that apply to similar airplanes operated by foreign operators. Where U.S. air carriers serve both domestic and foreign routes, the requirements that are adopted for foreign registered airplanes will also be applied to the portion of the U.S. fleet engaged in foreign air commerce.

In summary, pending the development of international or U.S. operating noise limits for aircraft in foreign air commerce, this amendment does not apply to operators of foreign registered airplanes. In addition, to prevent unjust discrimi-

nation against the operators of U.S. registered airplanes that operate over the same routes as foreign registered airplanes, this amendment does not apply to the portion of the fleets of U.S. registered airplanes that are engaged in foreign air commerce. For this purpose, this amendment provides for approval of methods of determining the portion of each operator's fleet that is engaged in foreign air commerce. For example, one such method would be the number of takeoffs and landings, during a representative base period, that were conducted by an operator's fleet in foreign air commerce as a percentage of the total takeoffs and landings of that fleet (in foreign and other air commerce) during that base period. This amendment does not prejudice the method of apportionment that may be most appropriate for each fleet.

B. AIRPLANES WEIGHING 75,000 POUNDS OR LESS

As noted above, the EPA proposal applied to all civil subsonic turbojet engine-powered airplanes regardless of the weight of those airplanes. In Notice 75-5, the EPA expressed its belief that all of those aircraft, which currently do not meet the noise levels of Part 36, " . . . are capable of meeting those levels by applications of various retrofit or re-engine options." EPA noted that "[s]ince all newly produced airplanes of that type (less than 75,000 pounds) must comply after January 1, 1975, with the noise levels prescribed in Part 36 (§§ 21.183(e) and 36.1(d)) of the Federal Aviation Regulations, there appears to be no valid justification to permit those airplanes in the existing fleets to be operated indefinitely at their present noise levels."

One commenter stated that retrofit solutions are available for all general aviation aircraft either in the form of noise suppressors, retrofits to the engines and nacelles, or retrofit powerplants. On the other hand, many others asserted that applying the requirements of Part 36 to aircraft weighing less than 75,000 pounds is unrealistic from a technological standpoint. In this connection, a number of commenters stated that "hush kits" have not been developed for their aircraft. One of those observed that, even if such a kit were developed for its aircraft, it would need tradeoffs to achieve compliance with Part 36. Others stated, in essence, that more time is needed for development of appropriate kits, one noting that the kits are in the engineering and development stages and in most cases there is no evidence as yet that they will function properly or be available in time to meet the compliance date. Also questioning the performance of available technology, another comment stated that the only "hush kit" available for small jet aircraft is of questionable value with respect to performance, safety, maintainability, and noise suppression capability.

Some persons based their objections on grounds that large airplanes, rather than those weighing less than 75,000

pounds, are responsible for the noise problem. Contending that large air carrier aircraft are the major cause of the problem, one commenter concluded that aircraft weighing less than 75,000 pounds should be given consideration in a separate notice of proposed rule making. Others argued that, if cumulative noise is the problem, scheduling is more significant than noise levels. In this regard, one commenter observed that business jet operations are sporadic while constant commercial operations at some airports are the cause of the noise problem. Based on this consideration, that commenter asserted that the public health and welfare is not endangered at the airports where jet operations are intermittent.

Some commenters cited operational noise abatement procedures as an alternative to compliance with Part 36 noise levels for aircraft weighing less than 75,000 pounds. Noting that testing of those procedures is going on at the present time and that positive results have been realized, one commenter asserted that more testing should be conducted to determine if there is a realistic alternative to compliance with the stringent regulatory requirements of Part 36. Another commenter contended that noise abatement procedures would be a realistic alternative if appropriate fines were levied on persons failing to observe those procedures. Operating procedures were also advocated by a commenter who argued that noise suppression devices, among other things, reduce engine efficiency and should not be required.

Other comments expressed the view that Part 36 requirements for business aircraft are unnecessary or, at the very least, should be delayed. With regard to necessity, several persons stated that normal attrition will eliminate the need to modify those aircraft. One commenter suggested that, to minimize the burden on industry, noise suppression should be accomplished when engine overhaul or replacement becomes necessary. Several persons suggested that plans to retrofit aircraft should be abandoned and that noise abatement should be focused on the next generation of small aircraft. This argument is based on their belief that, due to the new emission standards soon to become effective, many aircraft may have a useful life of two years or less.

Finally, many comments submitted in response to the proposal addressed the issue of economic reasonableness. In this connection, many persons asserted that the substantial cost of compliance is unreasonable in view of the minimal reduction in noise that would be realized, or asserted that the cost of substantial reductions in noise levels would be excessive. Also focusing on the cost of compliance, others stated that retrofit or re-engineing would, in some cases, exceed the value of the airplanes to be modified, and would cause operators to dispose of their aircraft with resulting negative effects on employment and the economy. Still others stated that the proposal is unfair

since it would be more restrictive and costly when applied to business and corporate aircraft than when applied to large, commercial aircraft.

As stated above, the FAA does not regard operational noise abatement procedures as a viable alternative to retrofit or related means of noise suppression at the source. On the contrary, retrofit or re-engineing are a means to achieve compliance with Part 36 noise requirements at the time of certification. Operational noise abatement procedures are considered an appropriate means to further reduce noise where circumstances warrant.

On the other hand, the FAA believes that the noise reduction benefits, technological practicability, cost effectiveness, and economic impact of applying the proposed requirements, across the board, to all turbojets weighing 75,000 pounds or less have not yet been adequately determined.

As noted above, section 611(d) of the Act requires the FAA to consider whether its noise regulations are economically reasonable, technologically practicable, and appropriate to the particular type of aircraft to which they apply. The FAA has determined that there are noise reduction modifications that can be applied, during the original design and manufacturing of the smaller turbojet types, in a manner that complies with Part 36 consistent with the economic and technological constraints of section 611(d). However, in many cases, these modifications involve re-engineing or other substantial redesign efforts that, while reasonable when spread over the production run, appear at this time to be of doubtful cost effectiveness if accomplished by retrofit. Unlike the economics of the mass fleet modification of heavy air carrier aircraft, or the economics of aircraft type design changes incorporated during the original manufacturing process, there is as yet no clear evidence that currently operating business or private jets weighing 75,000 pounds or less can be taken out of operation and retrofitted in an economically reasonable manner. This conclusion also applies with respect to regulatory action that might force the retirement of these aircraft. Unlike the larger aircraft types, for which the replacement or modification options have been shown to be reasonable and practicable under the terms of this amendment, more must be known regarding the economic factors involved in the application of operating noise limits to turbojets weighing 75,000 pounds or less. Many of the smaller turbojets are the major aeronautical investment of the corporations they serve. They are frequently the only airplane, or one of very few airplanes, owned by the operator. These airplanes are extremely varied in their missions. Their operating economics have not yet been summarized, in sufficient depth, to permit an adequate assessment of the probable impact of an across-the-board post-certification retrofit requirement. The supply problems affecting the small engine manufacturers

also require further study before the overall impacts of specific compliance dates can be assessed.

In view of the fact that the retrofit of currently operating turbojet airplanes weighing 75,000 pounds or less would in most cases involve new airplane design and development programs, and considering that such major redesign involves the need for further data concerning the effects of such retrofit on safety, fuel consumption, flight performance, operating economics, maintenance, and emission propagation, the FAA concludes that operating noise limits for turbojet airplanes weighing 75,000 pounds or less cannot be adopted at this time in a manner that is fully consistent with the constraints in section 611(d) of the Act. However, the FAA is expanding its comprehensive analysis of the public impact of aircraft noise. This effort is part of a broad FAA review of the national aviation system aimed at determining the environmental benefits and related costs of source noise controls, operating procedures, and land use planning. This study includes investigations of the noise impacts of different aircraft classes (including the smaller business jets), new technology that might be applied in each class, and forecasts of the growth of each class. As the results of this study become available over the next two years, FAA will undertake such further actions as may be appropriate.

(Sec. 307, 313(a), 601, 603, 604, and 611, Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421, 1423, and 1424, and 1431 as amended by the Noise Control Act of 1972 (Pub. L. 92-574)); Section 6(c), Department of Transportation Act (49 U.S.C. 4321 et seq.); Executive Order 11514, March 5, 1970.)

In consideration of the foregoing, the Federal Aviation Administration hereby takes the following actions based on Notice 74-14, and in response to the proposed regulation submitted to it under section 611(c)(1) of the Act by the U.S. Environmental Protection Agency which was published as Notice 75-5 (40 FR 8218; February 26, 1975), regarding operating noise requirements for civil subsonic turbojet engine-powered airplanes:

(1) In accordance with section 611(c)(1)(B) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1431(c)(1)(B)), Notice is hereby given that, for the reasons stated in Section VI, above, the Federal Aviation Administration is not prescribing regulations, at this time, in response to the portions of the proposals submitted by EPA and contained in Notice 75-5 regarding the adoption of operating noise limits for turbojet airplanes having maximum weights of 75,000 pounds or less and for airplanes engaged in foreign air commerce.

(2) In accordance with section 611(c)(1)(A) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1431(c)(1)(A)), Part 91 of the Federal Aviation Regulations (14 CFR Part 36) is amended, effective January 24, 1977, by adding a new Subpart E to read as follows:

Subpart E—Operating Noise Limits

- Sec.
 91.301 Applicability; relation to Part 36.
 91.303 Final compliance.
 91.305 Phased compliance: Parts 121 and 135.
 91.307 Foreign air commerce.
 91.309 to 91.399 [Reserved]

AUTHORITY: Secs. 307, 313(a), 601, 603, 604, and 611, Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354(a), 1421, 1423, 1424 and 1431 as amended by the Noise Control Act of 1972 (Pub. L. 92-574)); sec. 6(c), Dept. of Transportation Act.

Subpart E—Operating Noise Limits

§ 91.301 Applicability; relation to Part 36.

(a) This subpart prescribes operating noise limits that apply, in the United States, to the operation of U.S. registered civil subsonic turbojet airplanes with maximum weights of more than 75,000 pounds, and having standard airworthiness certificates. It includes operations under this part, and Parts 121, 123, and 135 of this chapter, but does not include operations under Part 129 of this chapter.

(b) Unless otherwise specified, all references in this subpart to Part 36 refer to 14 CFR Part 36, including the noise levels in Appendix C of that part notwithstanding the provisions of that part excepting certain airplanes from those noise levels, and notwithstanding the tradeoff provisions of that part except as provided in paragraph (c) of this section.

(c) Tradeoffs may be used for the following airplanes:

- (1) Airplanes shown to comply with Part 36 before January 1, 1977.
- (2) Airplanes shown to comply with Part 36 prior to the issuance of an original standard airworthiness certificate on or after January 1, 1977.
- (3) Airplanes for which the operator shows that, after full application of existing technology, the use of tradeoffs is required for compliance with Part 36.

§ 91.303 Final compliance.

On and after January 1, 1985, except as provided in § 91.307, no person may operate any airplane covered by this subpart, in the United States, unless that airplane has been shown to comply with Part 36.

§ 91.305 Phased compliance: Parts 121 and 135.

(a) Except as provided in § 91.307, each person operating airplanes covered by this subpart under an operating certificate issued under Parts 121 or 135 of this chapter shall comply with this section with respect to airplanes operated under that certificate.

(b) Unless scheduled for replacement in a plan approved under paragraph (c) of this section, airplanes shall be shown to comply with Part 36, or may not be operated in the United States, in accordance with the following schedule:

- (1) By January 1, 1981:
 - (i) At least one quarter of the airplanes in each airplane type that has four

engines with no bypass ratio or with a bypass ratio less than two.

(ii) At least one half of the airplanes in each other airplane type.

(2) By January 1, 1983:

(i) At least one half of the airplanes in each airplane type that has four engines with no bypass ratio or with a bypass ratio less than two.

(ii) All other airplanes.

(c) Airplanes may be operated if, under an approved plan, replacement airplanes have been ordered and are scheduled for delivery prior to January 1, 1985, but not after the dates specified in the plan. For the purpose of this paragraph, replacement airplanes are airplanes shown to comply with Part 36 prior to the issuance of an original standard airworthiness certificate.

§ 91.307 Foreign air commerce.

A person may elect not to comply with this subpart with respect to that portion of the airplanes operated by him and shown, under an approved method of apportionment, to be engaged in foreign air commerce.

§§ 91.309—91.399 [Reserved]

NOTE: The FAA has determined that this document contains a major action requiring the preparation of an inflation impact statement under Executive Order 11821 and OMB Circular A-107 and certifies that an inflation impact statement has been prepared.

Issued in Washington, D.C., on December 17, 1976.

JOHN L. MCLUCAS,
Administrator.

[FR Doc. 76-37648 Filed 12-22-76; 8:45 am]

[Docket No. 13243; Amdt. 36-6]

PART 36—NOISE STANDARDS: AIRCRAFT TYPE AND AIRWORTHINESS CERTIFICATION

Noise Regulations for Propeller-Driven Small Airplanes Submitted to the FAA By the Environmental Protection Agency; Notice of Decision

This document contains an amendment to Part 36 of the Federal Aviation Regulations (14 CFR Part 36) and a notice of decision not to prescribe certain additional amendments to the current noise certification standards and test procedures applicable to propeller-driven small airplanes. This action is in response to recommended regulations submitted to the Federal Aviation Administration (FAA) on December 6, 1974, by the U.S. Environmental Protection Agency (EPA), under section 611(c) of the Federal Aviation Act of 1958, as amended, which were published in a notice of proposed rule making identified as Notice 74-36. The amendment to the Federal Aviation Regulations (FARs) is based on the EPA proposals and involves (1) an increase in the number of test flights over the measuring point; (2) an increase in the substitute "D₀" distances used in the performance correction formula when the actual distance is not listed in the approved performance information; and (3) a revision of the noise

test engine power setting. This document also contains the FAA's decision, pursuant to section 611(c) (1) of the Federal Aviation Act of 1958, as amended, not to prescribe further amendments to the Federal Aviation Regulations based upon the remaining proposals contained in the EPA recommended regulation (Notice 74-39) regarding noise standards and procedures for propeller-driven small airplanes. However, as part of its response to the EPA recommended regulation, the FAA is also issuing a separate notice of proposed rule making (NPRM) under section 611(b) (1) of the Federal Aviation Act of 1958, as amended, containing a proposal that is beyond the scope of the EPA recommended regulation in Notice 74-39. That NPRM is published in the "Proposed Rule" portion of today's FEDERAL REGISTER. If adopted, the proposed rule would apply to small propeller-driven airplanes designed for "agricultural airplane operations," or for dispensing fire-fighting materials, which do not comply with the noise limits of FAR Part 36, and would prohibit operation except to the extent necessary to accomplish the work activity directly associated with the purpose for which the airplane is designed.

I. REGULATORY PROCEEDING HISTORY

On December 31, 1974, the FAA issued FAR Amendment 36-4 (40 FR 1029; January 6, 1975) to prescribe noise standards and procedures for propeller-driven small airplanes. FAR Amendment 36-4 was based upon FAA Notice 73-26 published October 10, 1973 (38 FR 23016).

On December 6, 1974, the EPA submitted to the FAA proposed amendments to the Federal Aviation Regulation for consideration and publication in the FEDERAL REGISTER under section 611(c) of the Federal Aviation Act of 1958, as amended ("the Act"). Accordingly, the FAA issued Notice 74-39 containing EPA's recommended regulations and a notice of publication regarding the notice of proposed rule making. Those notices were published on January 6, 1975 (40 FR 1061), and January 3, 1975 (40 FR 820), respectively.

Pursuant to section 611(c) of the Act and based upon a notice published January 30, 1975 (40 FR 4478), on March 3, 1975, a public hearing was held in Washington, D.C. to receive oral and written presentations on the matters contained in the notices. Interested persons were also afforded the opportunity to submit written comments to the regulatory docket.

After due and careful consideration of the information provided by the EPA and by the written and oral comments presented at the public hearing, or submitted to the regulatory docket, and after consultation with the EPA and with the Secretary of Transportation, the FAA concludes that it should adopt certain amendments to the FARs contained in the EPA recommended regulation but that it should not prescribe regulations based on other EPA proposals.

Forty-four written or oral comments in response to Notice 74-39 were received

from private citizens, citizens groups, state and local governments, aviation trade and user associations, and aircraft manufacturers. These comments, including the five oral presentations at the public hearing, address or affect the EPA proposals discussed below.

II. AMENDMENTS TO THE FEDERAL AVIATION REGULATIONS

A. TEST FLIGHT PROCEDURES

FAA Notice 73-26 (38 FR 28016; October 10, 1973) proposed to require a minimum of four horizontal test flights at maximum continuous power 1000 feet over a single noise measuring station to demonstrate compliance with the proposed noise level requirements. The EPA in response to that NPRM recommended that a minimum of six test flights should be required. The EPA contended that at least six flights (as required for turbojet and turbofan powered aircraft under FAR Part 36) are necessary to establish an adequate sample size to properly evaluate the noise emission of an airplane regardless of aircraft size. Based on the EPA recommendation and public comments submitted to the docket, the FAA adopted the EPA's recommendation in FAR Amendments 36-4 (§ F36.111). The FAA believes that the adoption of this recommendation has significantly improved the achievement of the confidence level of the noise data and evaluation in the noise certification test procedure for propeller-driven small airplanes. Since the FAA has already adopted this proposal in a previous amendment, further regulatory action is not needed in this proceeding.

Three commenters addressed the issue of the number of required test flights. Two simply agreed with the proposal without explanation. However, one commenter reported that its experience with noise measurement for German and Swiss noise certification has shown that four measurements are sufficient, if the measured levels difference is 1.5 dB(A) or less. The additional measurements are conducted only if that condition is not satisfied. The FAA is aware of this reported experience and procedure. However, as stated in the preamble to FAR Amendment 36-4, the FAA concluded that the six-flight requirement is necessary to achieve the required confidence level under FAR Part 36 Appendix F.

B. PERFORMANCE CORRECTION

The EPA stated in its recommended regulation (Notice No. 74-39) that it believed that the performance correction concept, which had been proposed (and subsequently adopted) by the FAA, was reasonable, but that it needed minor changes, including an additional factor to account for any difference between the aircraft test speed and the aircraft take-off speed. (Proposed § F36.201(b)).

The FAA and EPA each recognizes that the measurement of noise levels only during level flight has one deficiency; it does not account for the take-off performance of an aircraft.

The perceived and measured noise levels depend upon both the noise energy

of the source and distance between the noise source and the sound measuring device. Thus, the performance of the aircraft directly affects the level of noise perceived or measured on the ground. While the sound energy generated is constant for a given engine power setting (such as takeoff or maximum continuous), the noise level at the ground is dependent upon the climb path. In demonstrating takeoff noise, the steeper the climb, the higher the airplane above the measuring point, and the lower the measured or perceived noise level.

The level flight noise certification procedure prescribed for propeller-driven small airplanes does not itself provide information on the relationship between airplane performance and noise exposure on the ground. For example, two airplanes with the same power plant would be expected to produce about the same noise level over the measuring station at a height of 1000 feet, even though the total weight of one may be substantially greater than the other. However, for the reasons given above, a higher performance airplane (greater horsepower to weight ratio) would be expected to have the capability of achieving a higher altitude sooner, thus, producing less community noise impact and reduced perceived noise at the noise measuring point. To compensate for this factor in the simple flyover certification procedure, the FAA rule and the EPA proposal provide a "performance correction methodology" which would benefit airplanes with good take-off performance. As stated in the preamble of Notice 73-26, the proposed correction reflects the importance of good performance in removing the airplane as a noise source from the airport environs as rapidly as possible. As adopted by the FAA in Amendment 36-4, the performance correction factor is computed by using the following formula:

$$\Delta dB = 80 - 20 \log_{10} [(11430 - D_{50}) (R/C) / V_y + 50]$$

Where: ΔdB is the correction that must be added algebraically to the measured values (limited to ± 5 dB); D_{50} is the takeoff distance in feet from brake release to a point at which the airplane is at a height of 50 feet at maximum certificated takeoff weight; R/C is the certificated best rate of climb in feet per minute; and V_y is the airplane speed in feet per minute corresponding to the best rate of climb. When D_{50} is not listed in the approved performance information, the FAA correction procedure requires the use of 1,375 feet for a single engine airplane and 1,600 feet for a multi-engine airplane.

The EPA concurred with the concept, but proposed modifying the correction factor formula to read:

$$P = 60 - 20 \log [(11,500 - D_{50}) \sin \alpha + 50] - 10 \log (V_h / V_y)$$

Where: $\alpha = \arcsin (R/C) / V_h$; V_h = maximum speed (expressed in feet per minute) in horizontal flight at maximum continuous power or maximum test speed over the noise measuring station averaged for all test flights, whichever is greater; and V_y = best rate of climb speed at maximum takeoff weights, expressed in feet per minute.

In its recommended regulation, the EPA stated that it was concerned with

the FAA substitute D_{50} distance, because it believes that the distances of 1,375 and 1,600 feet are too short and that manufacturers of low performance airplanes might, therefore, choose not to list the actual D_{50} distances. To encourage the manufacturers to determine performance correction factors based upon actual performance characteristics, the EPA proposed to increase those distances to 2,000 feet for single-engine airplanes and 3,000 feet for multi-engine airplanes. The current rule (§ F36.201 (d)) uses approximate average distances for existing airplane types and models.

The FAA agrees with the EPA that the goal of the performance correction procedure is to create a regulatory incentive for increasing the performance of propeller-driven small airplanes. Thus, the substitute D_{50} distance (for use when an actual D_{50} takeoff distance is not listed in the approved performance information) should be more representative of approximately the longest D_{50} distance of current types and models of propeller-driven small airplanes. However, the FAA believes that the 3,000-foot distance (for multi-engine airplanes) recommended by the EPA exceeds the longest actual distance of any current type or model and, therefore, would result in an excessive penalty.

FAA review indicates that the longest D_{50} distances of current single-engine and multi-engine airplanes are approximately 2,000 feet and 2,700 feet, respectively. These distances are adopted in this amendment.

The EPA also noted that aircraft under test conditions (i.e. horizontal flight, maximum continuous power at 1,000 feet height above the test site) can be expected to fly over the test site at a speed greater than the takeoff climb speed. Therefore, the duration of the sound would be less under test conditions than the duration of sound experienced under or alongside an actual takeoff flight path. To better assess the noise measured under the specified test conditions, the EPA proposed to correct the noise level for performance ($10 \log (V_h / V_y)$) to account for the change in speed which results in a change in noise duration. The measurement of duration is a factor in EPNL, also proposed by the EPA, but does not affect noise measurements using A-weighted dB, adopted by the FAA for the reasons discussed in the preamble to Amendment 36-4 and below. The FAA concludes that FAR Part 36 noise levels include "consideration of performance and of noise duration and that further correction of measured data is not needed.

Four commenters responding to Notice 74-39 discussed the EPA proposed test performance correction. One commenter stated that while the performance correction contained in the proposed rule acknowledged the superior takeoff performance of turboprop aircraft, it is inadequate when related to the 11,500 feet correction distance point. The commenter felt that the correction should be related to the 21,000 feet (3.5 n.m.) point for better consistency with the FAR Part

36, Appendix C procedure which is applicable to propeller-driven large airplanes.

The FAA disagrees, since the purpose of the correction procedure is to reward those aircraft with good takeoff performance which will result in lower community noise impacts. The 3.5 n.m. point is used in the certification of large and jet powered aircraft but is not representative of noise impact-area at general aviation airports which primarily serve propeller-driven small airplanes.

Another commenter suggested that the certified best rate of climb (R/C) and corresponding airplane speed (V_y) must be determined from data for "aircraft in clean configuration." The FAA notes that these factors are measured during the airworthiness certification of the aircraft where it is also in the applicant's best interests to insure that these values are derived with the aircraft in a clean configuration. Therefore, leaving the choice of configuration to the applicant (as is presently done) will generally achieve the result sought by the commenter. The FAA believes it is not necessary to require noise certification testing in a clean configuration.

One commenter indicated that there is a need for a special factor for a fixed-pitch propeller in the performance correction formula. According to the commenter, this need arises from the fact that while the noise from the propeller rises at a rate almost linearly with the rotational Mach number (tip speed/speed of sound), the aerodynamic performance of a fixed-pitch propeller does not rise as rapidly as it does for a variable-pitch propeller. However, since the purpose of the performance correction is to reward the better noise reduction designs, the FAA does not agree. The commenter's recommendation would, in effect, provide an increased benefit to a noisier aircraft design feature, and thereby negate the intended incentive for employing the better designs.

Another commenter recommended that to obtain the equivalent of EPNL data, the correction should be made to the 1,000-foot altitude horizontal flight measurements, rather than to the takeoff climb data. This commenter felt that if the manufacturer does not choose to use actual takeoff distances in calculating the correction to his EPNL, he should be required to use distances which do not permit rating the airplane quieter than it is. While the commenter may be confusing a decrease in perceived or measured noise levels due to improved climb performance with a decrease in noise produced by an airplane, the FAA agrees that the incentive to develop better performance designs should not be limited to those airplanes which already have better than average performance characteristics. A manufacturer who does not list the actual D_{50} distance in the approved performance information should be required to use the approximate D_{50} distance of the current lowest performance airplane when calculating the performance correction. Thus, the com-

menter's argument has been essentially accepted in adopting the amendment.

The effect of a longer substitute D_{50} distance than that prescribed in FAR § F36.201 would be an increased incentive for aircraft manufacturers who do not achieve the average takeoff performance. The intent of the Noise Control Act of 1972, upon which the FAA and the EPA actions are based, is in part, to encourage the early and widespread application of the best available noise reduction technology consistent with economic reasonableness. With this objective in mind, the FAA analyzed the effects of the correction procedures proposed by the EPA and those adopted in FAR Amendment 36-4. As the EPA acknowledges, the differences are relatively minor and the precise effects on the takeoff performance of future aircraft types are not completely predictable; however, the FAA's analysis indicates that the procedure adopted in FAR § F36.201 does not create an adequate climb performance incentive, since it does not consistently apply to those airplanes which have less than average takeoff performance and which are not required to include the actual D_{50} distance in approved performance information during certification. Therefore, the FAA agrees that § F36.201 should be amended to create an increased incentive to produce aircraft with improved performance capabilities. The FAA concludes that the EPA proposal, as modified, accomplishes that purpose. Thus, the FAA is adopting the EPA recommended regulation regarding this proposal, as modified.

C. ENGINE POWER SETTING

The EPA proposed rule (§ F36.111(b)) would require that demonstration test overflights be performed at the "highest propeller rotational speed (rpm) corresponding to rated maximum continuous power," and that accelerated flight be measured and reported. Appendix F of FAR Part 36, as adopted in FAR Amendment 36-4, currently prescribes the test requirement in terms of "rated maximum continuous power" which necessarily has a corresponding rotational speed.

The EPA recommended regulation in Notice 74-39 does not discuss the purpose of the proposed redefinition of the required power setting and neither of the commenters on this proposal provided any reason for their positions (one in favor, one opposed) or what, if any, impact the amendment would have. However, the EPA project report submitted to the FAA indicates an intention to delete the current requirement for a specific engine power setting. The EPA reasons that, since the effectiveness of applied noise control techniques would be determined at the highest propeller rotational speed (rpm) corresponding to maximum continuous power, the resulting test data would be valid for other power settings as well. Further, since takeoff power (when available), is used only for takeoff and a relatively short portion of the climb path, after which power is reduced to less than takeoff power, the reduced power is appropriate in the horizontal

flight test procedure, if the overflight is performed at the corresponding highest propeller rotation speed.

The FAA agrees, in general, particularly since use of takeoff power is limited to the period of time shown in the approved engine specification, but notes that "rated maximum continuous power" is a term of engine rating generally applicable only to engine certification and not to aircraft certification or operation. The FAA agrees that the current engine power requirement is not realistic since it also relates to engine operating limitations established during engine certification. Since current FAR § F36.111(b) requires noise test flights at rated maximum continuous power, the EPA proposal would, in effect, delete the engine-power component of the requirement and rely solely on propeller rotation speed as the controlling mechanism. While the propeller is the dominant noise source and that propeller tip speed relates directly to the level of noise generated, the FAA believes that to properly account for the noise of the propeller/engine combination, the test procedure must retain an engine power specification no less than the maximum power approved for continuous normal operation (as well as, a propeller speed corresponding to that power).

The FAA notes that, since under certain conditions the highest propeller rotational speed can be achieved or maintained at significantly reduced manifold pressure (engine power) or turbine rpm, high propeller rotational speed does not necessarily have a corresponding high engine power level. Therefore, the FAA agrees with the proposal, except for its redefinition of engine power so as to completely eliminate the engine power requirement. The FAA also concludes that the standard should be prescribed in terms of engine power which has a corresponding propeller rotational speed (rpm).

The EPA also proposed to require measuring and reporting accelerated flight (where it is permitted); however, the FAA believes that the use of accelerated flight does not have a significant effect on the accuracy of measured data under the current rule. The purpose of the EPA proposal regarding accelerated flight is adequately satisfied under FAR § F36.109(g), which requires that aircraft speed and position and engine performance parameters be recorded at an approved sampling rate sufficient to insure compliance with the test procedures and conditions. Further, most propeller-driven small airplanes are not equipped with acceleration measuring instruments or devices and, if adopted, the proposal would require additional test measuring equipment to be installed. The FAA concludes that the measuring and reporting portion of the EPA proposal should not be adopted at this time and consideration of amending the test procedure should focus on the propeller/engine specification.

The FAA believes that the purpose of the noise regulation is to prescribe noise standards and test procedures for propeller-

driven small airplanes which reflect the noise levels to which the community is exposed during normal operation of the aircraft, rather than theoretical levels or those generated in abnormal or emergency operation. Thus, the FAA concludes that noise test (engine) power should be prescribed at no less than the power corresponding to the highest normal operating power consistent with airworthiness requirements and safe operating conditions for normal operation. As previously stated, the FAA believes that since propeller/engine noise is a function of power, as well as propeller rotation speed, the engine power specifications should not be deleted entirely but amended to require the highest power in the normal operating range which is provided in an Airplane Flight Manual, or in any combination of approved manual material, approved placard, or approved instrument markings. Thus, the test power requirement must be consistent with airworthiness requirements for normal operation and with safe operating considerations. The FAA concludes that the EPA proposal, as modified, accomplishes that purpose. Thus, the FAA is adopting the EPA recommended regulation regarding this proposal, as modified. This results in a required power level that is not greater than that in the prior rule but greater than that potentially permitted in the EPA proposal.

D. COMPLIANCE/EFFECTIVE DATES

The EPA proposed to apply its recommended regulations to applications for type certificates made after October 10, 1973 (the date of FAA Notice 73-26). Since notice and public procedure regarding the EPA proposals did not begin until January 3, 1975 (the date of the notice of publication regarding Notice 74-39), and since the FAA had issued its own regulations based on FAA Notice 73-26 on December 31, 1974, the FAA believes that it should not adopt the EPA proposed compliance/effective date which related to the prior FAA NPRM.

In considering the date for compliance with the amendments being adopted, the FAA notes that the amendments involve the noise test and noise evaluation procedure and have no significant effect on the noise limits prescribed for propeller-driven airplanes under Appendix F. Thus, there will be little, if any, impact upon applications for type certificates or acoustical change approvals. However, the FAA is aware that some potential burden may result from these changes in the manner of conducting the noise certification test and evaluating the resulting data. In this case, the FAA concludes that, while the necessary adjustments will be minor, a reasonable period must be provided for them to be made. Similarly, those noise tests that are completed prior to the effective date of this amendment should not be required to be repeated under the amended procedure. The FAA believes 30 days is an adequate and reasonable period. Thus, the FAA is adopting a compliance date which requires that noise tests conducted after

the effective date of this amendment be performed under the amended procedure. This amendment is effective January 24, 1977.

III. NOTICE OF DECISION NOT TO PRESCRIBE AMENDMENTS

A. AGRICULTURAL OPERATION AND FIRE FIGHTING AIRPLANES

Under the EPA recommended regulation contained in Notice No. 74-39, an airplane designed for agricultural or fire fighting operation would be required to undergo noise measurement testing in accordance with the Appendix F of FAR Part 36, even though that airplane may be excepted from demonstrating compliance with the noise levels prescribed in § 36.301. The EPA proposed exception to compliance would apply only if an operating limitation (proposed § 36.1583 (c)) regarding FAA approved noise abatement flight plans and routes were issued. Similar requirements were originally proposed by the FAA in Notice 73-26; however, in FAR Amendments 36-4, the FAA proposal was modified to make the rule more workable and to eliminate unnecessary restrictions on the continuation of those beneficial operations.

The FAA believes that the cost burden on certification applicants in submitting extensive noise test data and analyses primarily for statistical and informational purposes is not justified. Conducting noise testing solely to establish the noise levels produced by these excepted airplanes without also requiring compliance has not been shown to be needed. Further, as previously stated in the preamble to FAR Amendment 36-4, the FAA concludes that neither agricultural nor fire fighting operations could be continued under the operating limitation as proposed because those operations frequently involve practical exigencies requiring a greater than average performance and the capability of rapid response which is not compatible with flight-by-flight approval of all routes and all flight plans to promote noise abatement. Thus, the current noise limits do not apply to propeller-driven small airplanes "designed for 'agricultural operations' * * * or for dispensing fire fighting materials" (FAR § 36.1(a)(2)).

While the EPA proposal does not discuss the basis of its proposed rule, after analysis of that proposal and the regulatory docket, the FAA agrees that the current exception to the noise certification rules adopted by the FAA for agricultural and fire fighting airplanes should be amended. The FAA believes, however, that the amendment should clearly prohibit those operations which are not necessary to accomplish the work activity directly associated with the purpose for which the airplane is designed. The FAA believes that the exception is still justified as it applies to operations for which the airplane is designed but that it should not be extended to other operations by those airplanes. However, the FAA believes that such an amend-

ment is not within the scope of the notice of the EPA proposal. Thus, while the FAA concludes that it should not adopt any amendment based on the EPA proposal, the FAA is issuing a separate notice of proposed rule making which proposes to amend FAR Part 91 to prohibit operation of an airplane designed for agricultural operations or for dispensing fire fighting materials, which do not comply with the applicable noise limits of Part 36, except to the extent necessary to accomplish the work activity directly associated with the purpose for which the airplane is designed. (That NPRM is being published in the "Proposed Rule" section of Today's FEDERAL REGISTER.)

One commenter to the EPA proposal questioned both whether any small airplane exceeds "high-noise levels" except at full power and why only agricultural and fire fighting airplanes would be excluded under the rule, since safety of all operations involving full power for business and pleasure aircraft are just as important. However, stating that the health and welfare of the rural populace requires protection comparable to that afforded elsewhere, another commenter opposed the exclusion of aircraft used in agricultural operations from the noise standards for propeller-driven small airplanes. The FAA agrees that additional limitations may be needed but concludes that the distinction for agricultural and fire fighting aircraft is justified, in part, because greater than average performance and quick response time are frequently required in these operations. The public interest considerations dictate, as a matter of flight safety, that the small number of these special purpose airplanes should be partially excepted from the normal noise certification standards. A review of the safety and operating issues involved does not reveal a similar need to apply these exceptions to the noise standards to other propeller-driven small airplanes. For the unexcepted airplanes, noise certification testing and compliance is required to assure the protection of the public health and welfare from noise emissions above those noise levels prescribed in Appendix F. Further, the FAA believes that the exception to required compliance with noise emission standards for aircraft designed for agricultural or fire fighting operations should be specifically restricted solely to those operations for which the airplane is designed. Thus, while the FAA concludes that it should not adopt the amendment proposed by the EPA, based on experience in noise type certification under Subpart F of FAR Part 36, and analysis of the proposal and information in the regulatory docket, the FAA concludes that it should propose an amendment to the exception to the noise standards for agricultural operation and fire fighting airplanes which would restrict operations by excepted airplanes to those operations for which they are designed. As previously stated, such a proposal is being issued in a separate notice of proposed rule making.

B. NOISE EVALUATION MEASURING UNIT

The EPA proposed to adopt the Effective Perceived Noise Level (EPNL) in units of EPNdB, rather than the A-weighted noise level (AL) in units of dB(A) as the noise measure for propeller-driven small airplanes in current Appendix F of FAR Part 36 (Proposed § F36.301). In addition, the EPA proposes to require the use of the procedures in Appendix B of FAR Part 36 for converting the measured noise of propeller-driven small airplanes into the EPNdB units. (Proposed § F36.301(a)). According to the EPA, it proposed adopting the more complex noise evaluation unit primarily because future aircraft types may develop potentially obnoxious noise signatures which would not be reflected in the A-weighted noise measure.

In its proposal, the EPA refers to its report to Congress in August 1973, wherein it recommended a cumulative noise exposure measure based upon AL (A-weighted level). The EPA indicated, however, that the "use of an A-weighted sound level precludes the assessment of penalties for the existence of tones in the noise in the interest of simplifying the measure procedure. When appropriate, penalties for tones and other subjective attributes should be made in source regulations such as FAR 36." (Emphasis added).

The FAA believes that, in terms of providing protection to persons from noise annoyance, there is no significant achievable difference between using dB(A) or EPNdB for propeller-driven small airplane noise. Frequency tones and noise duration are not significant factors in perceived noise emissions of propeller-driven small airplanes. However, in terms of the complexity of noise testing, the difference is very significant. Further, it is unlikely that the developing technology of propeller-driven small airplanes will generate noise characteristics significantly different in quality from those currently produced. Thus, the FAA concludes that the use of EPNL would be an unwarranted and an unnecessary burden. There is no currently demonstrated need to apply the more complex unit of measurement to all current and future propeller-driven small airplanes on the assumption that new noise characteristics may emerge from new generation aircraft designs.

Information submitted to the FAA varies widely regarding the cost effectiveness of using EPNL instead of dB(A) measurements. In the EPA's project supporting its proposed regulations, the EPA estimated the cost of complying with the proposed EPA procedures, including EPNdB, to be "between 20 and 30 thousand dollars" for each aircraft manufacturer. The manufacturers' trade association comment to Notice 74-39, however, estimated that the cost of the equipment alone, which is necessary to compute aircraft noise levels in terms of EPNL, would be "\$50,000 over that required for dB(A) measurement." The FAA believes that both equipment cost estimates are essentially correct in the specific contexts in

which they are reported. However, the FAA experience with the implementation of FAR Part 36 indicates that few applicants for type certificates (usually manufacturers) actually purchase a computer or other major cost equipment items solely for noise test compliance purposes. Rather they tend to use existing commercial computation facilities/services or lease the necessary equipment for their own personnel to use. Under these conditions the FAA believes, that for most manufacturers there is not a substantial equipment cost differential incurred in using EPNdB rather than dB(A) as the unit of measurement. However, applicants for acoustic change approvals for propeller-driven small airplanes are usually individual owner/operators who have neither the facilities or equipment nor the technical know-how to operate rented equipment themselves. The owner/operator may also need to test an acoustic change before submitting it to the official FAA-witnessed tests. The complexity of calculating EPNdB under such circumstances is not as cost effective as the simpler dB(A), which reduces the down time of the airplane and equipment needs, and provides immediate test results. Another commenter correctly observed that "measurements in units of dB(A) can be evaluated and the 90% confidence interval examined in the field, to ascertain if additional noise overflights are required to obtain the required confidence level." Since a computer is required to calculate EPNL, such field determinations are practically impossible. If additional test flights are needed, it would be necessary to reschedule aircraft and acoustic equipment for a subsequent return to the field. Therefore, the FAA concludes that to be appropriate to the type of aircraft to which it applies, the designation of the simpler technique and calculation in using dB(A) for noise compliance tests for propeller-driven small airplanes should be retained.

The EPA also pointed out that "the main consideration is that EPNdB allows a correction for the presence of tone and the duration of sound, neither of which is accounted for in dB(A). As a growing number of propeller-driven planes are powered by turbine engines, it is imperative that a noise measurement standard be used which will most closely recognize that effect." The EPA estimated the current percentage of turbine powered aircraft in the propeller-driven small aircraft fleet to be 1.24 percent; this figure would increase to 1.69 percent in 1980 and reach 2.10 percent by 1985. Even assuming the need for making tonal corrections to measurements of noise from the turbine-powered propeller-driven small airplanes, the FAA concludes that the added cost involved in testing all propeller-driven small airplanes on the EPNL measurement is not justified at this time. The FAA notes, however, that nothing submitted to the rulemaking docket supports a conclusion that such a need for tonal corrections actually exists.

Twelve other persons commented on the issue of the noise measurement unit. Most believe that dB(A) is the appropriate unit, because the use of the dB(A) scale is a more cost-effective and practical standard than EPNdB. They indicate that the character of the sound generated by the propeller-driven small airplane does not warrant the more sophisticated test equipment and the rigorous data reduction required by the EPNdB standard. The FAA agrees in general with the reasoning expressed by these commenters.

Two comments supported the EPA's proposal. One commenter in recommending the use of EPNL stated that "while EPNL measurements and calculations are more complicated than with dB(A), the EPNL system takes into account details regarding the noise spectrum and flyover cycle duration which are not as accurately evaluated or are not evaluated at all using dB(A)." As stated above, the FAA has carefully considered the issues involved and concludes that no real need has been shown for the more complicated measurement unit and that, therefore, the added costs have not been justified at this time.

Another commenter supporting the EPA proposal stated that as an increasing number of propeller-driven planes are powered by turbine engines, the regulatory noise measurement standard should more closely recognize the effect on the human ear. Since the FAA believes the EPA recommended noise measurement unit would not be cost effective and that there is little, if any, preferential value of EPNL to the public health and welfare when applied to propeller-driven small airplanes, it does not accept the commenter's suggestion. A second recommendation by this commenter would require the use of both EPNdB and dB(A) measurements during compliance demonstration tests. While monitoring the aircraft test using dB(A) sound level meters may in some cases reduce the need to schedule retesting at later dates, such measurements would not consistently predict the effectiveness of subsequently analyzed EPNdB data measurements. Further, the FAA considers the dual measuring procedure unnecessary. As previously stated, the current procedure provides adequate and sufficient noise data for determining compliance with noise level standards.

The adequacy of the dB(A) measuring unit to provide protection to the public health is also supported by its adoption by other Federal agencies. The dB(A) unit has been selected by the Department of Labor and the Department of Health, Education and Welfare (HEW) for the critical task of rating and limiting noise hazards. The value of dB(A) is stressed in the document entitled "Criteria for a Recommended Standard for Occupational Exposure to Noise" published by HEW in 1972.

Studies such as NASA's "Community Reaction to Airport Noise" stress the fact that simple weighted sound pressure level values (dB(A) and dB(N)) provide ade-

quate approximations to more complex measures for the purpose of determining community noise exposure.

The FAA believes the use of dB(A) is consistent with the qualifications in EPA's noise measurement recommendations, since the FAA has determined that noise emission characteristics of propeller-driven small airplanes do not need regulatory penalties to account for tone or duration, and EPA's recommendation is linked to a concern for those factors.

The use of dB(A) ensures that reasonably priced meters can give an immediate reading upon which to base a decision for additional test flights. If this decision can be made while aircraft are available and test conditions are established, savings in cost and time are possible. Finally, dB(A) is the unit used in evaluating non-aviation transportation noise sources, and is used in setting noise limits in many industrial and nonindustrial noise standards.

Since there appears to be no clear benefit in a complex measure, the FAA concludes that from an environmental standpoint and in terms of cost effectiveness, dB(A) is the unit of noise measurement that should be applied to the certification testing of propeller-driven small airplanes. Thus, no amendment is adopted based on this EPA proposal.

C. NOISE COMPLIANCE LEVELS AND DATES

The EPA stated in its recommended regulation that it believed that the noise level requirements achieved under FAR Part 36, Appendix F, do not sufficiently represent the maximum safe and economical noise control that can be implemented by applications of current and available technology. Further, the EPA believes that modifications are necessary to properly reflect the achievements that can be anticipated by the application of future technology.

Specifically, the EPA proposed the following noise standards and compliance dates (Proposed § F36.301):

(1) For T/C applications made between October 10, 1973, and January 1, 1975. Aircraft weighing up to 1,320 pounds (599 kg) may not exceed 79 EPNdB. That noise level limit increases at a rate of 1 EPNdB for each additional 165 pounds (75 kg) to a maximum of 93 EPNdB at 3,630 pounds (1,647 kg) which limit applies to aircraft up to 12,500 pounds (5,670 kg).

(2) For T/C applications made between January 2, 1975, and January 1, 1980, and for new production aircraft manufactured on or after January 2, 1977. The basic limit is the same as in paragraph (1) above, except that the maximum noise level is 91 EPNdB at 3,300 pounds (1,397 kg) and applies to aircraft weighing up to, and including, 12,500 pounds (5,670 kg).

(3) For T/C applications made after January 2, 1980. The noise level limit would be prescribed under the formula $EPNL = 89 - 15 \log(12.5/W)$; "W" is the aircraft maximum certificated takeoff weight in thousands of pounds.

In its proposal, the EPA compared the FAR Part 36 compliance noise levels with the noise emission levels produced by a wide variety of existing propeller-driven airplanes. In so doing, the EPA stated that "a large number of the small existing propeller airplanes are capable of producing significantly lower noise levels than that being proposed by the FAA for all future types." The FAA recognizes that some current aircraft types have noise emission levels that are lower than those required under FAR Part 36, Appendix F. However, the levels adopted by the FAA in FAR Amendment 36-4 require significant noise reductions affecting approximately 20 percent of the aircraft types and approximately one-half the aircraft type-models of propeller-driven small airplanes currently in production. It was pointed out by several participants at the public hearings held on the EPA proposal that the FAR Part 36 requirement entails significant economic impact on affected aircraft manufacturers and, thus, their customers, and that the imposition of more restrictive standards or earlier compliance dates, such as those proposed by the EPA, would have profound economic implications. For example, if a sound level limit of 5 dB(A) lower than those in FAR Part 36 were adopted (a level which is still somewhat higher than the equivalent EPNdB proposed by the EPA), the FAA estimates that the noise level limits would be exceeded by approximately 90 percent of existing aircraft models. While some models that meet the present FAR Part 36, Appendix F noise standards could, with relatively minor modifications, achieve the initial lower level proposed by the EPA, this is not the case with most current models. Compliance with future noise level limits would be even more questionable. Since the Noise Control Act of 1972 requires the FAA to consider whether proposed noise standards are "economically reasonable," and appropriate for the particular type of aircraft; as well as "technologically practicable," the FAA must carefully weigh the economic consequences of incrementally lower noise level standards, applicable to both current and future airplanes.

Several commenters estimate that the majority of currently produced aircraft models would require extensive modification in order to attain the EPA recommended lower noise levels, and that the increase in cost of most models would be significantly higher than that reflected in the EPA proposal even excluding the additional higher operating costs for those models requiring more powerful engines to maintain the desired levels of performance. The FAA has not received information from which to assess whether the estimates submitted to the docket regarding the anticipated costs of significant noise level reduction are representative of those which would actually occur. It is evident, however, that if design changes such as those cited by commenters would be needed, the EPA proposal would involve a significant design modification and investment by the airframe and engine manufacturers. It

would particularly burden this segment of the aviation industry which neither has the research and development resources nor anticipates the market base to amortize the resulting costs.

Testimony at the public hearing and comments submitted to the regulatory docket raise questions regarding the views expressed by the EPA concerning the ready availability of economical technology with which to meet its proposed standards. The EPA believes that a reduction in noise levels, which is larger than those prescribed in FAR Part 36, could be achieved by more effective application of "current technology," "available technology," and "future technology" without imposing a significant economic burden. According to the EPA, the equivalent of 2 or 3 dB(A) further reduction in propeller, engine, or exhaust noise, which EPA identifies as the principal noise sources in propeller-driven small airplanes, is possible and is needed to provide the required protection to the public health and welfare. The EPA states that the use of a more efficient three-bladed propeller rotating at a lower tip-speed by means of reduction gearing and the application of noise muffling materials and exhaust mufflers will achieve economical noise control at the levels it recommends. The FAA notes, however, that the EPA proposal is based upon several assumptions which are not discussed in the recommended regulation. The EPA recommended regulation and the comments received in the docket and at the public hearing do not present specific information or analysis regarding how particular aircraft types or models can achieve significant and economical noise reductions under the EPA proposal. The FAA believes that such information and supportive data is essential to the support of the proposal. Information concerning particular airplanes is needed regarding (1) any incremental noise reduction which can be economically achieved beyond those currently required by FAR Part 36, including the additional benefit, if any, of such reductions on the public health and welfare; (2) any noise control techniques which are, or may be available, but which are not or will not be effectively applied to particular aircraft unless lower noise levels are adopted; (3) any cost increases which would result from applying those techniques; and (4) any reduction in performance, fuel economy, engine emissions, or other factor which affects its use for its intended purposes, its airworthiness, or its acceptance in the market place. While the FAA is aware that the noise control techniques suggested by the EPA are, or will be applied in varying degrees to certain aircraft in achieving compliance with FAR Part 36 noise levels, it does not have, and the docket does not contain, information or data that will reasonably support a finding that these techniques can be more effectively applied at this time. In adopting FAR Amendment 36-4, the FAA concluded that the prescribed noise levels provided the protection to the pub-

lic health and welfare required by section 611(d) of the Act. Further, as stated in the preamble to FAR Amendment 36-4, "the FAA believes that, rather than require specific type design details, this first issuance of a noise rule for propeller-driven small airplanes should set quantitative noise limits and permit any means of compliance that also complies with the applicable airworthiness requirements." Since the docket has not presented information adequate to support a finding that noise control technology is not being effectively utilized or that specific design details should be required under aircraft noise regulations, the FAA concludes that it could not adopt any regulation based on this proposal at this time without ignoring the duty in section 611(d)(4) of the Act to consider economic reasonableness and technological practicability.

The EPA also recommended the use of a ducted fan propulsion system or one of its derivatives. However, several commenters were critical of a ducted fan as a noise abatement technique and the FAA generally agrees with those commenters. The ducted fan is generally not practical for most current single-engine airplanes because it seriously reduces forward visibility for the pilot and significantly affects the aircraft weight/thrust ratio. Thus, for most airplanes to use the ducted fan, they would have to be redesigned into pusher type configurations; that in turn would require extensive modification to the wings, flight control, landing gear, fuselage and seating. Such extensive redesigning virtually produces a new aircraft type. In addition, the thrust efficiency of a ducted fan propulsion system is significantly less than that of a conventional propeller at the altitudes and speeds for which propeller-driven small aircraft are usually designed. The installation of more powerful engines would be required in many cases to compensate for thrust loss and avoid decreased useful load capacity and performance.

Fourteen other comments were submitted to the docket regarding EPA's proposed noise emission levels and compliance dates. One comment expressed the views of several persons who believe "that an aircraft with less than 300 horsepower does not emit offensive noise to the extent that it warrants regulation." Another commenter complained that the limitation of noise emission on airplanes with only 150 horsepower is not justified. Under the Noise Control Act of 1972, the FAA is required to issue noise standards and rules which afford relief and protection to the public health and welfare from aircraft noise. In prescribing these regulations, the FAA must consider whether they would be "consistent with the highest degree of safety in air commerce or air transportation in the public interest" and whether they are "economically reasonable, technologically practicable, and appropriate" for the type of aircraft, engine, appliance, or certificate to which they would apply. The FAA and the EPA have determined that the prescription of rules which af-

ford relief and protection from the noise emissions of propeller-driven aircraft is appropriate, and find no rational basis for distinguishing among these airplanes, except with regard to aircraft weight which, to some extent, reflects the horsepower of the engines. Thus, lower horsepower airplanes as a class should not be excluded from the application of appropriate noise standards. However, the noise levels prescribed in the FAA noise standard applicable to propeller-driven small airplanes do reflect consideration of the extent to which their noise emissions impact the community.

Other commenters specifically addressed the need for the EPA proposed regulations and believe the FAA should reject the EPA proposed noise levels and their date of implementation. Some concern was expressed that the EPA proposals, if adopted, would eliminate the substantial equivalence with the accepted international (ICAO) standard for small propeller aircraft. In opposing the EPA's proposal, one commenter at the public hearing argued that the EPA had admittedly used NASA research goals as a basis for their recommendations. The commenter stated his belief that a base of technical data to support EPA's conclusions must have a firmer foundation. While agreeing that the noise standards initially adopted by the FAA may not attain the eventually achievable measure of protection from unwarranted small aircraft noise, the FAA believes that further noise reductions should await a more definitive showing that the required technology can be applied in an economically reasonable manner.

In its proposal, the EPA states that it may be assumed that the least noisy airplanes currently being produced meet applicable airworthiness standards and "are competing economically in the marketplace with other propeller-driven small airplanes with higher noise levels." Thus, the EPA concludes that the application of existing noise reduction technology has not had a detrimental impact on the competitiveness of such airplanes. However, no information or data is presented in the docket by which this conclusion may be assessed. The FAA believes that at least one important aspect of the competitiveness among various airplanes in the marketplace has not been addressed. While for purposes of noise control regulation propeller-driven small airplanes are treated as a class according to aircraft weight, they are designed and flown for a wide range of purposes requiring different flight and performance characteristics. Comparisons of marketplace acceptance among the least noisy airplanes and noisier airplanes should include only those airplanes which actually compete for the same portion of the market. The docket does not provide a basis for such comparisons.

Two commenters fully supported the EPA proposals at the public hearing. One comment questioned whether continued production of noisy aircraft can be justified when aircraft manufacturers can build aircraft that are much quieter than some currently in production. Another

commenter stated his belief that the FAA rule does not adequately control propeller-driven aircraft noise, but rather removes existing voluntary restraints by eliminating all incentive for the implementation of available noise control technology.

In response to questions seeking to clarify their statements, neither of these commenters offered information regarding any incremental benefits or cost/benefits tradeoffs under the EPA proposal or regarding the degree of detriment to the public health and welfare caused by noise emissions from propeller-driven small airplanes. In the preamble to FAR Amendment 36-4, the FAA responded as follows to a similar comment regarding inclusion of a more specific provision in the rule for progressively reducing the noise level limits as new and more advanced technology is developed: "The FAA agrees that the regulation should be reviewed and amended when justified by new technology. However, this should be accomplished in each case, with notice and public procedure as required by the Administrative Procedure Act." After carefully considering the EPA proposed noise levels and compliance dates in light of all comments to the docket, the FAA concludes that there is not sufficient supporting information or data to permit an informed determination as to whether these EPA proposals are currently either "economically reasonable" or "technologically practicable" within the meaning of section 611 of the Act. The docket contains no information regarding any incremental benefits to the public health and welfare which would be achieved and that would justify adopting the proposed noise level amendments to FAR Part 36.

In its proposal, the EPA states it has not demonstrated any certain or probable increment of benefit to the public health or welfare that would be achieved by imposing lower noise limits. The EPA has stated that data on the magnitude of the health and welfare effects of propeller-driven small airplanes, "are not available; consequently, cost effectiveness and/or cost benefits tradeoff of how much noise reduction is justified cannot be made." The EPA indicates that its objective is the issuance of regulations that "shall be the 'umbrella' type in the sense that those aircraft regulated can all comply by use of available technology but some may be capable of achieving lower noise levels than others by virtue of being able to use the technology more effectively." While the FAA generally agrees with this regulatory philosophy, after reviewing the technology and economics involved, the FAA believes that the statutory requirements are met by the standards in FAR Part 36, which for continued production, require modification of a significant proportion of current aircraft types and of a substantial percentage of current models. Thus, existing regulations provide adequate noise control and abatement by achieving a reduction in noise level that was imposed after consideration of economic and technological impact. The FAA also believes the current standards and regu-

tions achieve the objective of the EPA recommended regulation, i.e., prescribing an "umbrella" or upper limit for aircraft noise levels which can be lowered, according to the development of technologies and to the cost effectiveness of prescribing those noise levels. Further study of the detrimental effects of noise emissions from propeller-driven small airplanes may also reveal the need and justification for lower noise levels in the future. The FAA will continue to assess the noise emission impact of propeller-driven small airplanes to determine when further reductions in noise levels become appropriate and otherwise consistent with the limitations of § 611(d) (4) of the Act.

D. FIELD CALIBRATIONS WITH VOLTAGE INSERT DEVICES

Under the EPA recommended rule, "field calibrations must be supplemented with the use of an insert voltage device to place a known signal at the input of the microphone, just prior to and after recording aircraft noise data." (Proposed § F36.107(c)).

While the FAA would have no objection to the use of such a device either in the laboratory or in the field, the docket does not demonstrate any persuasive technical reason for requiring it in field calibrations. In view of the rapidly changing technology in acoustical measurement, the FAA believes it should not restrict use of future technologies by prescribing the proposed calibration procedure or equipment. Rather, it should afford maximum flexibility in equipment and methodology used while setting specific requirements on the types and quality of data used to demonstrate compliance with prescribed noise level limits. No comment on this proposal was received in the regulatory docket. Thus, the FAA concludes that it should not adopt any regulation based on this EPA proposal but should continue to consider for approval any calibration procedure which yields accurate and reproducible results and which is consistent with International Electrotechnical Commission (IEC) Publication No. 179, dated 1973, entitled "Precision Sound Level Meters."

E. CORRECTIONS FOR WINDSCREEN LOSSES

The EPA also proposed in § F36.105(f) of its recommended regulations to require that when a windscreen is employed with the microphone during compliance testing, "corrections for any insertion loss produced by the windscreen, as a function of frequency, must be applied to the measured data and that the corrections applied must be reported."

While no commenter addressed this proposal, the FAA believes that, as adopted, the current Appendix F provides an adequate means of accounting for correction of windscreen losses without separate treatment under the rule. FAR § F36.109(a) requires that data representing physical measurements or corrections to measured data be recorded in permanent form and appended to the record (however, corrections to measurements for normal equipment response deviations need not be reported). All

other corrections must be approved and estimates must be made of the individual errors inherent in each of the operations employed in obtaining the final data. The FAA concludes, therefore, that amendment of § F36.109, based on this EPA proposal, is not necessary and that the EPA's recommended regulations on this topic should not be adopted.

F. MINOR LANGUAGE DIFFERENCES AND STATISTICAL DATA REQUIREMENTS

The text of the EPA's proposed rule contains several minor provisions which the EPA does not discuss in the preamble to Notice 74-39. Some of these provisions differ from the language in the rule adopted in FAR Amendment 36-4. Most of these differences appear to be minor in nature and the FAA believes that they do not affect the level of protection from aircraft noise afforded by the rule.

The FAA notes, however, that several of the differences would require measuring and reporting some data which would provide only statistical information without any apparent increase in the environmental benefits achieved by the rule. While the materials in the docket do not discuss the purpose of these provisions, the FAA believes that it should not use noise certification rules to obtain data for statistical purposes, unless there is a demonstrated relationship with the need to protect the public health and welfare. Examples of EPA recommendations that the FAA believes would be a requirement to provide statistical data not needed for noise certification or helpful in reducing noise include—(1) the recording and reporting of the "true and indicated airspeed" and engine performance in the specific terms of power, manifold pressure, and blade pitch in every test (proposed § F36.109(e)(4) and (5)); and (2) correcting test data to the additional reference conditions of "sea level pressure of 2116 psf" and "zero wind" (proposed § F36.201(c)). Further, the FAA does not believe that correction to "sea level pressure" is practicable or that correction to "zero wind" is needed for single point measurements such as those prescribed for propeller-driven small airplanes. Thus, the FAA concludes that it should not prescribe regulations based on those EPA proposals.

G. ECONOMIC REASONABLENESS

Section 611(d) of the Federal Aviation Act of 1958, as amended, requires, among other things, that the FAA consider whether proposed aircraft noise standards and regulations are "economically reasonable." The preceding discussions of the respective EPA proposals generally include assessment of their economic reasonableness or cost effectiveness. However, review of the regulatory docket reveals that most commenters speak to the economic implication and adequacy of the EPA recommended regulation-as-a-whole, rather than as separate proposals. Twenty-five of the 44 commenters included written submissions or oral presentations regarding the economic effects of the EPA recommended regulations.

Representative of the general tenor of the comments from small airplane pilot/owners is one which said that the commenter is troubled by an observed trend towards increasing costs of private flying as a result of regulatory amendments. Other commenters address concern for the anticipated economic burden on the aircraft manufacturers and ultimately purchasers and operators of new aircraft if the EPA proposals were adopted. Several commenters stated that they believe the impact of increased cost of aircraft as a result of implementation of the EPA proposals would be inflationary and have a stifling effect on the growth of general aviation. Another commenter stated that "With ever increasing financial demands being placed on the industry, there should be unquestionable justification for adding to the already monumental costs of purchasing and operating a small propeller-driven airplane. We certainly have no qualms about quieter aircraft; however, we do feel that new acoustical standards should be adopted only at a rate that is consistent with advances in technology and without sacrifice to performance of efficiency * * *. Let's have quieter airplanes but let's not do it by forcing them to stay on the ground."

These and similar comments indicate that commenters believe that the costs of complying with EPA's proposed noise limits and other recommended regulations would be significant. The EPA itself estimated the cost of the type certification and the modifications needed for compliance with its proposal would range from \$300 to \$2,500 per airplane, depending upon the type of airplane and the production run. While the EPA concluded that this increase for an airplane ranging in price from \$14,000 to \$25,000 appeared to be "economically reasonable for the reduced noise benefits to be derived," the cost data and information submitted to the docket do not discuss what noise benefits would be achieved under the proposal. In addition aircraft manufacturers suggest that the costs would be several times as large as those estimated by the EPA.

Other commenters, while not providing specific cost information, frequently expressed concern for the costs of complying with the EPA proposals. All parties agree that adoption of the EPA proposals would result in increased costs. As previously stated, however, the docket does not contain data or information from which to demonstrate that any certain or probable increment of benefit to the public health and welfare would be achieved by adopting the recommended regulations. Absent such data and information regarding the achievable benefits to the public health and welfare, the FAA concludes that the EPA proposals considered in this section cannot be issued consistent with the requirement in section 611(d) of the Federal Aviation Act of 1958 to consider whether a proposed regulation is economically reasonable and technologically practicable.

H. GENERAL COMMENTS

The regulatory docket for Notice 74-35 received several comments addressing subjects not relevant to the issues involved in the EPA proposals. Thus, many of those comments were beyond the scope of Notice 74-39, and are not discussed in this notice. However, some comments address relevant matters not previously discussed.

One commenter argued that most of the objection to aircraft noise comes from those people in the vicinity of an airport and that most of these people knew the consequences of their decision to live near areas of aircraft noise. This commenter concluded, "we do not believe that the aviation industry should suffer because a minority of the population choose to live in such areas." Another commenter said, "Since I know that I will inevitably be taxed to support aviation, as an aircraft owner, I would prefer that my taxes went toward the support of more essential research. Research toward making aviation more acceptable to the general public, as in quieter engines, is a worthy investment." Several other commenters generally opposed the EPA proposals on various grounds relating to the lack of need for further noise constraints on general aviation airplanes or, to commenters' beliefs that the sound of an aircraft engine is not as offensive as other noise sources, including other modes of transportation.

As discussed in the preamble to FAR Amendment 36-4, the FAA has determined that the control and abatement of noise produced by propeller-driven small airplanes is appropriate and necessary under the Noise Control Act of 1972. The scope of Notice 74-39 encompasses the recommended regulations submitted by the EPA which it believes are necessary to protect the public health and welfare. To the extent the commenters suggest that there is an absence of information demonstrating the extent to which the proposals would be cost-effective or benefit the public health and welfare, the FAA agrees. The FAA also agrees that further research on this important matter is essential to determine the need for further noise limit reductions in the future.

The FAA is expanding its comprehensive analysis of the public impact of aircraft noise. This effort is part of a broad FAA review of the national aviation system aimed at determining the environmental benefits and related costs of source noise controls, operating procedures, and land use planning. This study includes investigations of the noise impacts of different aircraft classes (including propeller-driven small airplanes), new technology that might be applied to each class, and forecasts of the growth of each class. As the results of this study become available over the next two years, FAA will undertake such future actions as may be appropriate.

Despite the assurance in the preamble to Notice 74-39 that the proposed rules would not require a retrofit of existing

RULES AND REGULATIONS

propeller-driven small airplanes, several persons commented on that issue. One suggested that before requiring retrofitting of existing airplanes, the FAA should provide earlier notice because "with an advance notice of retrofit requirements, airplane manufacturers will have an opportunity to plan for changes in the power plants at a later date." The FAA is aware of the problem raised by this commenter and will consider that suggestion in any future rule-making proceedings regarding proposals to prescribe retrofit requirements for propeller-driven small airplanes.

Several commenters objected generally to the EPA proposal because the FAA had already adopted noise limitations for propeller-driven small airplanes. The FAA concludes that the airplane noise regulation recommended by the EPA has been carefully considered and that the EPA has provided several significant contributions to the noise certification test procedure in its recommended regulations which contribute to carrying out the purposes of section 611 of the Act. For the reasons discussed above, those proposals are adopted by the FAA in the following amendments to the Federal Aviation Regulations or, as modified, are being proposed for adoption in separate notice of proposed rule making.

IV. AMENDMENT AND NOTICE OF DECISION

AUTHORITY: [Sections 313(a), 601, 603, and 611 of the Federal Aviation Act of 1958, (49 U.S.C. 1354(a), 1421, 1423, and

1431), as amended by the Noise Control Act of 1972 (Pub. L. 92-574, Oct. 27, 1972); section 6(c) of the Department of Transportation Act (49 U.S.C. 1655 (c)); Title I of the National Environmental policy Act of 1969 (42 U.S.C. 4321 et seq.); and Executive Order 11514, dated March 5, 1970.]

In consideration of the foregoing, the Federal Aviation Administration hereby takes the following actions in response to the recommended regulation submitted to it under section 611(c)(1) of the Act by the U.S. Environmental Protection Agency which was published as Notice 74-39 (40 FR 1061; January 6, 1975), regarding noise standards and test procedures applicable to propeller-driven small airplanes:

(1) Notice is hereby given in accordance with section 611(c)(1)(B) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1431(c)(1)(B)) that the Federal Aviation Administration is not prescribing regulations in response to the proposals contained in Notice 74-39 regarding (a) agricultural operation and fire fighting airplane exception to required compliance; (b) EPNdB as the noise evaluation measuring unit; (c) noise compliance levels and dates; (d) field calibrations with voltage-insert devices; (e) corrections for windscreen losses; and (f) other minor proposals and statistical data requirements not adopted under item (2).

(2) In accordance with section 611(c)(1)(A) of the Federal Aviation Act of

1958, as amended (49 U.S.C. 1431(c)(1)(A)), Appendix F of Part 36 of the Federal Aviation Regulations (14 CFR Part 36) is amended, effective January 24, 1977, as follows:

1. Paragraph (b) of section F36.111 is revised to read as follows:

Section F36.111 Flight procedures.

(b) Each test over flight must be conducted:

(1) At not less than the highest power in the normal operating range provided in an Airplane Flight Manual, or in any combination of approved manual material, approved placard, or approved instrument markings; and

(2) At stabilized speed with propellers synchronized and with the airplane in cruise configuration, except that if the speed at the normal operating range provided in a graph would exceed the maximum speed authorized in level flight, accelerated flight is acceptable.

§ F36.201 [Amended]

2. Paragraph (d) of section F36.201 is amended by deleting the figure "1375" and inserting the figure "2000" in place thereof; and by deleting the figure "1600" and inserting the figure "2700" in place thereof.

Issued in Washington, D.C., on December 17, 1976.

JOHN L. McLUCAS,
Administrator.

[FR Doc. 76-37649 Filed 12-22-76; 8:45 am]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[14 CFR Parts 21, 36, and 91]

[Docket No. 16382; Notice No. 76-27]

AGRICULTURAL OPERATION AND FIRE FIGHTING PROPELLER-DRIVEN SMALL AIRPLANES

Noise Abatement Operating Restriction

The Federal Aviation Administration is considering amending Parts 21, 36, and 91 of the Federal Aviation Regulations to prohibit the operation of propeller-driven small airplanes that are designed for agricultural operation, or dispensing fire fighting materials, which do not comply with the noise limits under Appendix F of FAR Part 36, except to the extent necessary to accomplish the work activity directly associated with the purpose for which the airplane is designed (including flight crew training in the special purpose operation of the airplane). These amendments would revise § 2193 and add new §§ 36.1583 and 91.59, and would apply to airplanes that do not have flight time prior to January 1, 1980.

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the docket number and be submitted in duplicate to the Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket, AGC-24, 800 Independence Ave., SW., Washington, D.C. 20591. Comments on the overall environmental aspects of the proposed rule are specifically invited. Information on the economic impact that might result because of the adoption of the proposed rule is also requested. All communications received by the FAA on or before February 28, 1977, will be considered by the Administrator before taking action on the proposed rule. The proposal contained in this notice may be changed in the light of the comments received. All comments will be available, both before and after the closing date for comments, in the FAA Rules Docket for examination by interested persons.

Any person may obtain a copy of this notice of proposed rule making (NPRM) by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Information Center, APA-430, 800 Independence Avenue, SW., Washington, D.C. 20591, or by calling (202) 426-8058. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future NPRMs should also request a copy of Advisory Circular No. 11-2 which describes the application procedure.

I. BACKGROUND

On December 31, 1974, the Federal Aviation Administration (FAA) issued Amendments 21-42 and 36-4 to the Federal Aviation Regulations (40 FR 1029; January 6, 1975) which prescribe noise standards and test procedures appli-

cable to propeller-driven small airplanes.

On December 6, 1974, under § 611(c) (1) of the Federal Aviation Act of 1958, as amended by the Noise Control Act of 1972 (Pub. Law 92-574), the U.S. Environmental Protection Agency (EPA) submitted to the FAA its recommended regulation regarding noise standards and test procedures applicable to propeller-driven small airplanes. Accordingly, the FAA published the EPA proposals in a notice of proposed rule making (NPRM) identified as Notice 74-39 (40 FR 1061; January 6, 1975). In accordance with section 611(c) (1) the Federal Aviation Act of 1958, as amended (the "Act"), the FAA conducted public rule-making proceedings regarding the proposed amendments contained in Notice 74-39. Subsequently, in a document entitled: "Noise Regulations for Propeller-Driven Small Airplanes Submitted to the FAA by the Environmental Protection Agency and Notice of Decision" (which is being published in the "Rules" portion of today's FEDERAL REGISTER), the FAA is—(1) adopting certain amendments to FAR Part 36, which are modifications of the proposed regulations submitted by the EPA, and (2) announcing its decision not to prescribe further amendments in response to the remaining EPA proposals contained in Notice 74-39.

As discussed in the Notice of Decision, having considered the EPA proposed rule concerning agricultural operation and fire fighting airplanes, the FAA believes that the scope of the exception currently prescribed in the FARs for those aircraft should be amended. However, the FAA concluded that the appropriate amendment would be beyond the scope of Notice 74-39 and, therefore, should be the subject of further notice and public procedure in considering that amendment for adoption. This notice implements that decision.

Under the EPA recommended regulation contained in Notice No. 74-39, an airplane designed for agricultural or fire fighting operation would be required to undergo noise measurement testing in accordance with the Appendix F of FAR Part 36, even though that airplane may be exempted from required compliance with the noise levels prescribed in § F36.301. The EPA proposed exception to compliance, if adopted, would have applied only if an operating limitation regarding FAA approved noise abatement flight plans and routes were issued.

As stated in the preamble to FAR Amendment 36-4 and the Notice of Decision, the FAA concluded that the cost burden on certification applicants in submitting extensive noise test data and analyses primarily for statistical and informational purposes was not justified. Conducting noise testing solely to establish the noise levels produced by these exempted airplanes without also requiring compliance was not shown to be needed. Further, the FAA concluded that neither agricultural nor fire fighting operations could be continued under the rule as proposed because those operations frequently involve practical exigencies requiring a greater than average

performance and the capability of rapid response which are not compatible with flight-by-flight approval of all routes and all flight plans to promote noise abatement. Thus, while the FAA concluded that it should not adopt an amendment based on the EPA proposal, the FAA believes that it should consider amending the scope of the current exception to the noise certification rules for agricultural operation and fire fighting airplanes.

FAR Part 36 currently prescribes noise standards for propeller-driven small airplanes "except airplanes that are designed for 'agricultural aircraft operations' as defined in § 137.3 of this chapter, as effective January 1, 1966, or for dispensing fire fighting materials." (FAR § 36.1(a)(2)). That exception applies without regard to the category in which the aircraft is type certificated. For various reasons, most agricultural operations and fire fighting airplanes are type certificated in the restricted category and thus, are limited under § 91.39(a)(2) to operations associated with the purpose for which the airplane is designed. However, those airplanes may, in some cases, be certificated in the standard classification under applicable airworthiness requirements. While it still believes that the public benefit derived from the agricultural and fire fighting operations justifies retaining the exception to noise limit requirements for the limited number of these special purpose airplanes, the FAA believes that this public benefit does not justify operations by those airplanes which are not necessary to accomplish the agricultural operation or fire fighting purpose. Thus, the FAA proposes adopting a new § 91.59 to prohibit operation of an airplane with a standard airworthiness certificate that is designed for agricultural operations or for dispensing fire fighting materials, which does not comply with the applicable noise limits of Part 36, except to the extent necessary to accomplish the work directly associated with the purpose for which the airplane is designed. The FAA also proposes to include a provision in the proposed § 91.59 to permit conducting an operation for the exclusive purpose of providing flight-crew training in the special purpose operation of the airplane. Agricultural aircraft operated under Part 137 of the Federal Aviation Regulations would also be permitted to conduct "non-dispensing aerial work operations" as described in § 137.29(c) of that Part.

So that pilots will know which airplanes, within a type or model, are within the scope of new § 91.59, a new § 36.1583 would be added requiring a statement, in the Airplane Flight Manual or other approved manual material, marking, or placards, that advises the pilot of this fact. So that approvals of changes to the type design of agricultural or firefighting airplanes do not circumvent the intent of this amendment, it would also apply to acoustical changes to those aircraft. Consistent with this, § 21.93 would be amended to delete the total exclusion of agricultural and firefighting airplanes from the defi-

inition of "acoustical change," and limit that exclusion to aircraft "for which no requirements are prescribed in Part 36 of this chapter."

As proposed, the cutoff date for first flight time (January 1, 1980) would refer to the first flight time of the aircraft, in the case of applicants for the original issuance of a standard airworthiness certificate, but would refer to the first flight time of the aircraft in the configuration for which approval is requested, in the case of applicants for acoustical change approvals.

The proposed rule would assure that FAR Part 36 noise limits are met by the affected special purpose airplanes which are type certificated in categories other than "restricted" and operated for purposes besides those for which they are designed. The impact of the proposed rule would be to prohibit operations not directly associated with the designed for purpose by these airplanes which do not comply with FAR Part 36. An FAA analysis of the potential impacts under the proposal indicates that aircraft manufacturers have expressed an interest in type certificating in categories other than "restricted" and under the exception in § 36.1(a)(2) only in connection with airplanes manufactured for export. Thus, there should be very limited economic impact on airplane operations. The proposed rule, if adopted, would foreclose the potential operations permitted under the current rule and, thus, provide increased control of future aircraft noise and corresponding protection to the public health and welfare. Further, the proposed rule would not result in an increase in current fuel usage or engine emission and no inflationary or other significant economic impact would result.

The rule proposed in this notice has been reviewed in accordance with Executive Order 11821, entitled "Inflationary Impact Statements" (39 FR 41501; November 29, 1974), and it has been determined that the preparation of an inflationary impact statement is not necessary.

This amendment is proposed under the authority of §§ 307(c), 313(a), 601 (a) and 611(b) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1348(c), 1354(a), 1421, and 1431(b)); § 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)); Title I of the National Environmental Policy Act of 1969 (42 U.S.C. 4321, et seq.); and Executive Order 11514, March 5, 1970.

In consideration of the foregoing, the Federal Aviation Administration proposes to amend Parts 21, 36 and 91 of the Federal Aviation Regulations (14 CFR Parts 21, 36, and 91) as hereinafter set forth:

§ 21.93 [Amended]

1. Paragraph (b)(3) of § 21.93 of Part 21 would be amended by adding the following at the end of the first sentence, within the parenthesis, after the words "firefighting materials": "and for which no requirements are prescribed in Part 36 of this chapter."

2. A new § 36.1583 would be added to Part 36 to read as follows:

§ 36.1583 Noncomplying agricultural and fire fighting airplanes.

(a) This section applies to propeller-driven small airplanes:

(1) That are designed for "agricultural aircraft operations" as defined in § 137.3 of this chapter, as effective on January 1, 1966, or for dispensing fire fighting materials;

(2) For which application is made for the original issue of a standard airworthiness certificate, and that have not had any flight time before January 1, 1980; and

(3) For which application is made for an acoustical change, for airplanes that have a standard airworthiness certificate after the change in type design and have not had any flight time, before January 1, 1980, in the changed configuration for which approval is requested.

(b) For airplanes covered by this section and that do not comply with the noise limits prescribed in Subpart F of this part, a statement must be furnished,

in the manner prescribed in § 36.1581, reading as follows:

Noise Abatement: This airplane does not comply with the applicable noise limits in Part 36 of the Federal Aviation Regulations and shall be operated in compliance with noise abatement regulations applicable to airplanes that have not had flight time before January 1, 1980.

3. A new § 91.59 would be added to Part 91 to read as follows:

§ 91.59 Agricultural and firefighting airplane noise restrictions.

(a) This section applies to propeller-driven small airplanes, having standard airworthiness certificates, that are designed for "agricultural aircraft operations" as defined in § 137.3 of this chapter, as effective on January 1, 1966, or for dispensing fire fighting materials, and that have not had flight time before January 1, 1980.

(b) If the Airplane Flight Manual, or other approved manual material, markings, or placards for the airplane indicate that the airplane does not comply with the applicable noise limits in Appendix F of Part 36 of this chapter, no person may operate that airplane, other than to the extent necessary for the accomplishment of the work activity directly associated with the purpose for which it is designed, except as provided in paragraph (c) of this section.

(c) The airplane may be operated—

(1) To provide flight crewmember training in the special purpose operation for which the airplane is designed; and

(2) In the conduct of "nondispensing aerial work operations" in accordance with § 137.29(c) of this chapter.

Issued in Washington, D.C., on December 17, 1976.

JOAN B. BARRIAGE,
Acting Director,
Office of Environmental Quality.

[FR Doc.76-37650 Filed 12-22-76;8:45 am]