

remain in service until they reach their presumed retirement age.

Price of Improved Technology.

Building upon the new-production assumption described above, increasing levels of noise certification stringency impose increasing development costs on manufacturers of airplanes and engines. As the level of stringency increases, more design compromises may be necessary to reduce certification noise levels at the expense of airplane weight, engine size and operating costs. New airplane types entering the fleet would be burdened by this cost in their development.

Impact on Asset Values. For the phaseout scenarios, the CAEP analysis assumed that the airlines operating in areas without phaseout requirements would benefit from availability of relatively lower-priced aircraft removed from the fleets of airlines operating in noise-restricted areas.

A CAEP Steering Group met in September 2000 to review the results of the analysis prepared by WG1 to further reduce airplane noise levels and to formulate specific recommendations on the new standard and on transition options that were to be forwarded to the full CAEP.

The FAA stresses that this economic information is presented as background material for how ICAO made its decision on the Chapter 4 standard. It does not affect the domestic regulatory impact of this proposed rule. That impact is analyzed later in this document.

In January 2001, the CAEP approved an approach to noise mitigation that includes the reduction of noise at its source (the aircraft), improved land use planning around airports, and a wider use of aircraft operating procedures and restrictions that abate noise. To reduce noise at its source, the CAEP adopted a standard that is ten decibels lower, on a cumulative margin basis, than the current standard of Chapter 3 in ICAO Annex 16. This adopted standard was derived from one of the WG1's recommendations. The United States participated with other countries in the CAEP effort to develop this quieter, more stringent aircraft noise standard.

On June 27, 2001, at its 163rd session, the ICAO unanimously approved the adoption of the new Chapter 4 noise standard in Annex 16. The new noise standard will apply to any application for new type designs submitted on or after January 1, 2006, for countries that use Annex 16 as its noise certification basis.

The text of Annex 16 describing the maximum noise levels for the new Chapter 4 noise limit is as follows:

- The maximum permitted noise levels are defined in Chapter 3 of Annex 16; and may not be exceeded at any of the measurement points; and
- The sum of the differences at all three measurement points between the maximum noise levels and the maximum permitted noise levels (the Stage 4 limit) specified in Chapter 3 of Annex 16 may not be less than 10 EPNdB; and
- The sum of the differences at any two measurement points between the maximum noise levels and the corresponding maximum permitted noise levels specified in Chapter 3 of Annex 16 may not be less than 2 EPNdB.

In accepting Chapter 4 standards, the FAA interprets the Chapter 4 requirements of Annex 16 as follows:

- (1) None of an airplane's maximum noise levels (flyover, lateral, and approach) may be greater than the maximum permitted noise levels for Chapter 3 airplanes, as defined in Annex 16; and
- (2) To determine Stage 4 compliance, an airplane's maximum flyover, lateral and approach noise levels are each subtracted from the maximum permitted noise levels. The differences obtained are the noise limit margins, to be used as follows:

- (a) When the three margins are added together, the total must be 10 EPNdB or greater; and
- (b) When any two of the margins are added together, the sum must be 2 EPNdB or greater.

Overview of the Proposed Rule

The FAA is proposing to amend parts 36 and 91 to add a new noise standard for Stage 4 subsonic jet airplanes and subsonic transport category large airplanes. The proposed amendment would include the following changes. The FAA would be adding "Stage 4 noise level", "Stage 4 airplane", and "Chapter 4 noise level" definitions to parts 36 and 91. In the acoustical change section of part 36, the requirements for Stage 4 airplanes would be added. Part 36 would also have a new section on Chapter 4 equivalency to Stage 4 that would require operators to have a Chapter 4 equivalency statement on board each Stage 4 airplane. Changes to Appendices A and B to part 36 would include an acceptable equivalent alternative for noise measurement and evaluation for Stage 4 airplanes. In part 91, the operating rules would be amended to allow the operation of Stage 4 airplanes where Stage 3 airplanes are now required. No operating limitations are being proposed.

Section-by-Section Discussion of the Proposal

The FAA is proposing to establish a new Stage 4 noise standard in part 36 for subsonic jet airplanes and subsonic transport category large airplanes. This new noise standard would ensure that the latest available noise reduction technology would be incorporated into new aircraft designs. The new Stage 4 noise standard has been written to mirror the ICAO Annex 16 Chapter 4 noise standard. The following is a section-by-section discussion of the proposed changes to part 36 and its appendices, and the associated operating rules in part 91.

*Stage 4 Noise Certification
Section 36.1*

The FAA is proposing to add the following three terms to § 36.1(f): "Stage 4 noise level," "Stage 4 airplane," and "Chapter 4 noise level", to be designated as paragraphs (f)(9), (f)(10), and (f)(11) respectively. These new terms, used in the proposed noise standard, would be added to the list of definitions currently listed in § 36.1(f) to include Stage 4 airplanes in the applicability section of part 36.

Section 36.6

The FAA is proposing to add new paragraphs (c) and (d) to § 36.6 to incorporate by reference ICAO Annex 16, Volume 1, Aircraft Noise, Third Edition, July 1993, Amendment 7. This change would add the ICAO document that includes requirements for noise measurement and evaluation and the maximum noise level to the list of acceptable alternatives.

Section 36.7

The FAA is proposing to amend § 36.7 to allow for the addition of the Stage 4 designation. Section 36.7(e) would be amended to include airplanes that were not originally certificated as Stage 4, but become Stage 4 after a change in type design. A new paragraph (f) to § 36.7 would describe the acoustical change approval process for airplanes originally certificated to Stage 4.

Section 36.103

The FAA is proposing to amend § 36.103(b) to establish the cutoff date for new Stage 3 certification, and add a new paragraph (c) to establish the date after which all new certification must be to Stage 4. Paragraph (c) would also designate the type certification requirements of part 36 necessary to comply with Stage 4.