

the declared flight envelope from idling speed up to 103 percent of the maximum rotor speed permitted for rating periods of 2 minutes or longer, and up to 100 percent of all other rotor speeds. The proposal would also add to the revised paragraph (b) a requirement that if there is any indication of a stress peak arising at high physical or corrected rotational speeds, the surveys shall be extended. If it becomes physically impossible to achieve these extended rotor speeds, it would have to be shown by analysis or other means that no harmful vibration exists. Engine manufacturing and build tolerances can result in peak stresses occurring at slightly different rotor speeds between engines and engine parts (i.e., blades) of the same type design. The speed extension, therefore, is intended to cover inherent engine-to-engine and blade-to-blade variations in vibratory response.

Section 33.83(c). The proposal would revise the current paragraph (c) and reword the existing text to harmonize and clarify the existing requirement. Current paragraph (c) requires that during the vibration test, each accessory drive and mounting attachment must be loaded with the load imposed by each accessory used only for aircraft service up to the limit load specified by the applicant for the engine drive or attachment point. The proposal would require that evaluations be made of the effects on vibration characteristics of operating with scheduled changes (including tolerances) to variable vane angles, compressor bleeds, accessory loading, the most adverse inlet air flow distortion pattern declared by the manufacturer, and the most adverse conditions in the exhaust duct(s).

Section 33.83(d) This proposal would add a new paragraph (d) that would require that the effects on vibration characteristics of likely fault conditions shall be evaluated by test, or analysis, or by reference to previous experience and be shown not to create a hazardous condition. Since U.S. engine manufacturers presently address and evaluate the effects of vibration characteristics through analysis in accordance with the requirements of § 33.75, this proposal would harmonize part 33 with JAR-E.

Section 33.83(e). This proposal would add a new paragraph (e). The current § 33.83(b) requires that vibration stresses of rotor and stator components be less, by a margin acceptable to the Administrator, than the endurance limit of the material from which these parts are made, adjusted for the most severe operating conditions. This proposal would slightly modify the text of the

requirement by incorporating the standard industry practice of making due allowance for variations in material properties. Current industry practice is based on the FAA interpretation of the current requirement. The vibration stresses associated with the vibration characteristics determined under § 33.83 must be less than the endurance limits of the materials concerned, after making certain allowances. The suitability of these stress margins would have to be justified for each part and if it is determined that certain operating conditions, or ranges, need to be limited, operating and installation limitations would be established. The proposed new paragraph (e) would harmonize with existing JAR-E-650 provisions and conform with current component vibration testing practices.

Section 33.83(f). Proposed new paragraph (f) would require that compliance with § 33.83 be substantiated for each specific installation configuration that can affect the vibration characteristics of the engine. The proposed language would provide that if these vibrations cannot be fully investigated during engine certification, then the methods by which they can be evaluated and compliance shown shall be substantiated and defined in the installation documents required by § 33.5. The proposed amendment would codify current industry practice.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1990 (44 U.S.C. 3501 *et seq.*), an evaluation of the paperwork burden of this proposal is not required since there are no recordkeeping or reporting requirements associated with this proposed rule.

Preliminary Regulatory Evaluation, Initial Regulatory Flexibility Determination, and Trade Impact Assessment

Proposed changes to Federal regulations must undergo several economic analysis. First, Executive Order 12866 directs that each Federal agency propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule (1) Would generate benefits outweighing its

costs; (2) is not a "significant regulatory action" as defined in the Executive Order; (3) is not "significant" as defined in DOT's policies and procedures; (4) would not have a significant impact on a substantial number of small entities; and (5) would not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Regulatory Evaluation Summary

Of the several proposals, only one might result in additional cost. The FAA has identified the requirements in proposed § 33.83(b) as the only one that could require minor additional engine testing and engineering analysis, resulting in negligible compliance costs. The reference to experience, analysis, and component tests in proposed § 33.83(a) should not impose additional costs since it incorporates current industry practice. The revised engine windmilling requirements of proposed new § 33.74 and the proposed amendments to § 33.92(a) could potentially result in cost savings to engine and transport airplane manufacturers. The FAA solicits comments from interested persons on the costs of the proposed rule.

The primary benefits of the proposed rule would be harmonization of airworthiness standards with the European Joint Aviation Requirements and clarification of existing standards. The resulting increased uniformity of standards would simplify airworthiness approval for import and export purposes and would avoid some of the costs that can result when manufacturers seek type certification under both sets of standards. While not readily quantifiable, the cost economies of harmonization would far exceed the minor incremental costs of the proposed rule.

Regulatory Flexibility Determinations

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by Federal regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. Based on thresholds in implementing FAA Order 2100. 14A, Regulatory Flexibility Criteria and Guidance, the FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small entities.