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**PRELIMINARY REGULATORY EVALUATION,  
INITIAL REGULATORY FLEXIBILITY  
DETERMINATION, TRADE IMPACT ASSESSMENT,  
AND UNFUNDED MANDATES ASSESSMENT**

**FOR**

**NOTICE OF PROPOSED RULEMAKING:**

**REVISION OF BRAKING SYSTEMS AIRWORTHINESS  
STANDARDS TO HARMONIZE WITH EUROPEAN  
AIRWORTHINESS STANDARDS FOR TRANSPORT  
CATEGORY AIRPLANES**

OFFICE OF AVIATION POLICY AND PLANS  
AIRCRAFT REGULATORY ANALYSIS BRANCH, APO-320

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## Executive Summary

This Regulatory Evaluation examines the impacts of a proposal to amend the airworthiness standards for braking systems of transport category airplanes. The proposed changes to section 25.735 of the Federal Aviation Regulations (FAR) would harmonize braking systems design and test requirements with standards proposed for the European Joint Aviation Requirements (JAR). The proposals were developed in cooperation with the European Joint Aviation Authorities and the U.S. and European aviation industries through the Aviation Rulemaking Advisory Committee. The proposed changes would: (1) add appropriate existing JAR requirements to achieve harmonization; (2) move some of the existing regulatory text to an advisory circular; (3) add regulations addressing automatic brake systems, brake wear indicators, pressure release devices, and system compatibility; and (4) consolidate or separate some subparagraphs for clarity.

Although several revisions would be made to **FAR § 25.735**, only one proposal (of 17 total) would impose additional costs. Most of the changes codify current industry practice or conform **FAR § 25.735** to corresponding sections of the JAR without substantive effects. Manufacturers of part 25 large airplanes could experience additional costs ranging between approximately \$20,000 and \$60,000 per type certification. For manufacturers of part 25 small airplanes, the additional costs could equal \$20,000 per type certification. According to one manufacturer, cost savings from harmonization, in terms of avoiding added costs of coordination and documentation, would be equal to or greater than the maximum incremental costs of \$60,000. Potential safety benefits resulting from specification of minimum accepted standards would supplement these **cost-savings**, resulting in a significant positive benefit-to-cost ratio.

The proposed rule is not "a significant regulatory action" as defined in Executive Order 12866 and the Department of Transportation's Regulatory Policies and Procedures. In addition, the proposed rule would not have a significant impact on a substantial number of small entities, would not constitute a barrier to international trade, and would not result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of \$100 million or more annually.

Regulatory Evaluation of NPRM: Revision of Braking Systems Airworthiness Standards to Harmonize with European Airworthiness Standards for Transport Category Airplanes

I. Introduction

The Federal Aviation Administration proposes to revise the airworthiness standards for transport category airplanes to harmonize braking systems design and test requirements with standards proposed for the European Joint Aviation Requirements (JAR). These proposals were developed in cooperation with the Joint Aviation Authorities (**JAA**) of Europe and the U.S. and European aviation industry through the Aviation Rulemaking Advisory Committee (**ARAC**), and are intended to benefit the public interest by standardizing certain requirements, concepts, and procedures contained in the airworthiness standards without reducing, but potentially enhancing, the current level of safety.

Generally, the FAA proposes to: (1) add appropriate existing JAR requirements to achieve harmonization; (2) move some of the existing regulatory text, considered to be of an advisory nature, to an advisory circular; (3) add regulations addressing automatic brake systems, brake wear indicators, pressure release devices, and system compatibility; and (4) consolidate and/or separate some subparagraphs for clarity.

## II. Background

The airworthiness standards for transport category airplanes are contained in part 25 of the FAR. These standards apply to airplanes manufactured within the U.S. and to airplanes manufactured in other countries and imported under a bilateral airworthiness agreement.

The **JAA** developed a common set of airworthiness standards for use within the European aviation community. The standards for European type certification of transport category airplanes, JAR-25, are based to a large extent on part 25 of the FAR. Type certificates issued under JAR-25 standards are accepted by the aircraft certification authorities of 23 European countries.

**FAR** part 25 and JAR-25 are, however, not identical. Certain differences between the standards can result in substantial additional certification costs when airplanes are type-certificated to both sets of standards. These additional costs do not necessarily bring about an increase in safety since the FAR may use different means from the JAR to accomplish the same safety intent.

Recognizing that a common set of standards would not only economically benefit the aviation industry but also maintain the necessary high level of safety, the FAA and JAA, in 1988, began a process to harmonize the airworthiness requirements of the U.S. and Europe. During the June 1992 **FAA/JAA** annual meeting in Toronto, Canada, the ARAC was recognized as the forum through which

rulemaking harmonization will be achieved. The ARAC was established by the FAA on January 22, 1991 to provide advice and recommendations concerning the **FAA's** rulemaking program.

Starting in 1992, the FAA harmonization effort for various systems related airworthiness requirements was undertaken. A working group of industry and government braking systems specialists of Europe and the United States **was** chartered by notice in the Federal Register (59 FR 30080, June 10, 1994). The working group was tasked to develop: (1) **a** harmonized standard, such as a **Technical Standard Order (TSO)**, for approval of wheels **and** brakes to be installed on transport category airplanes; (2) **a** draft notice of proposed rulemaking (**NPRM**), with supporting economic and other required analyses; (3) and/or **any** other related guidance material or collateral documents, such as advisory circulars, concerning new or revised requirements and the associated test conditions for wheels, brakes and braking systems, installed in transport category airplanes (**§§** 25.731 and 25.735). The JAA is to develop a similar proposal to amend JAR-25, as necessary, to achieve harmonization. The rulemaking proposal contained in this notice is based on a recommendation developed **by** the Braking Systems Harmonization Working Group, and presented to the FAA by the ARAC as **a** recommendation.

### III. Proposed Changes and Associated Costs and Benefits

Although several revisions would be made to FAR § 25.735, only one would impose additional costs (see below -- proposal 11). Most of the changes codify current industry practice or conform FAR § 25.735 to corresponding sections of the JAR. Adoption of the proposed changes would increase harmonization and commonality between American and European airworthiness standards, thus enhancing safety. Harmonization would eliminate unnecessary duplication of airworthiness requirements, thus reducing manufacturers' certification costs. These costs can be significantly increased if the manufacturer is burdened with meeting differing FAA/JAA requirements. Six substantive proposals (of 17 total proposals) in the subject NPRM essentially mirror the proposed European standards; the remaining 11 proposals have minor differences. The FAA believes the enhanced safety benefits and harmonization cost savings would easily exceed the relatively low incremental costs of the proposed rule (see Section IV below).

[The following discussion is not a verbatim presentation of each proposal as delineated in the preamble. Those provisions more complex in nature or containing potential economic impacts, however, are discussed somewhat more extensively]

Proposal 1. The current title of § 25.735, "Brakes" would be revised to: "§ 25.735 Brakes and braking systems." The proposed change is of an editorial nature only, and consequently would have no impact on costs and benefits.

Proposal 2. Section 25.735(a) would be retitled and revised as follows:  
"a) Approval. Each assembly, consisting of a wheel(s) and brake(s) must be approved." The proposed change is of an editorial nature only and therefore would have no impact on costs and benefits.

Proposal 3. The title "Brake system capability" would be added to § 25.735(b), and the current text of the first sentence of § 25.735(b) would be separated into §§ 25.735(b) and (b) (1), and revised to read: " (b) Brake system capability. The brake system, associated systems and components must be designed and constructed so that: (1) if any . . . . element fails, or if any single source of . . . . energy supply is lost, it is possible to bring the airplane to rest with **a braked roll stopping distance of not more than two times** that obtained in determining the **landing distance as** prescribed in § 25.125 (current language states " with a mean **deceleration** during the **landing roll** of at least 50% . . . ." )."

The words "braked roll stopping distance" in place of "landing roll" is intended to clarify that the requirement refers only to the distance covered while the brakes are applied. The change from "at least 50 percent mean deceleration" to "not more than two times the landing distance" is intended to eliminate any possible confusion between "mean" and "average" deceleration, and to state the requirement more clearly in terms of its real intent. There are also other minor changes in text in the same section which are editorial and/or for clarity. These revisions have no incremental cost impacts.

Proposal 4. A new § 25.735(b) (2) regarding protection against fire resulting from hydraulic fluid leakage, spillage, or spraying on hot brakes would be added (same intent and contents of the ACJ 25.735(b) of JAR-25). The section would require that "**Fluid** lost from a brake hydraulic system, following a failure in, or in the vicinity of, the brakes, shall be insufficient to cause or support a hazardous fire on the ground or in **flight**." There are no incremental costs associated with this change since a similar requirement is implicit in current FAR §§ 25.863 (Flammable fluid fire protection) and 25.869 (Fire protection systems).

Proposal 5. The title "**Brake controls**" would be added to § 25.735(c) and the current text would be separated into §§ 25.735(c) and (c) (1) and revised as follows: "**(c)** Brake Controls. The brake controls must be designed and constructed so that: (1) Excessive control force is not required for their operation." The current text reads "**Brake** controls may not require excessive control force in their operation." There are no incremental costs associated with these changes since they are clarifications of current regulations.

Proposal 6. A new § 25.735(c) (2) would be added requiring that "**If** an automatic braking system is installed, means must be provided to **(i)** arm and disarm the system, and **(ii)** allow the pilot(s) to override the system by braking." The intent and content of the proposed changes have generally been adopted in the design of current automatic braking systems and are currently included in FAA Order 8110.8, " Engineering Flight Test Guide for Transport

Category Airplanes" and are standard industry practices. There are, therefore, no incremental costs associated with this proposal.

Proposal 7. The title " Parking **brake**" would be added to § 25.735(d) and the current text modified **as** follows: "The airplane must have a parking brake control that, when selected on, will, without further attention, prevent the airplane from rolling on **a** dry and level paved runway when the most adverse combination of maximum thrust on one engine and up to maximum ground idle thrust on any, or all, other engine(s) is applied. The control must be suitably located or be adequately protected to prevent inadvertent operation. There must be indication in the cockpit when the parking **brake** is not fully released."

The aforementioned changes would accomplish the following: (1) clarify that the section refers to the means provided to the flightcrew for the application of the wheel brakes in the airplane parking mode; (2) enhance the safety intent by covering not only the **case** of a single engine takeoff thrust check with **all** other engines stopped, but would **also** cover an equally if not more probable **case** in which any or all other engines are operating and producing up to **a** maximum ground idle thrust; (3) clarify that the takeoff thrust to be considered for the "**critical**" engine is the maximum which can be achieved, and by implication **also** require the relevant thrust cases for remaining engine(s) according to the environmental circumstances that are dictated for the achievement of the maximum takeoff thrust on the critical engine. The requirement for suitable location or protection against inadvertent operation

of the parking brake control is derived from the current ACJ 25.735(d) of JAR-25 and is introduced because it is believed that such considerations should be regarded as requirements, and have generally been treated as such in the past by both airplane manufacturers and regulatory authorities. The additional requirement for cockpit indication when the parking brake is "not fully released" is to caution the pilot against a takeoff with the parking brake set. These changes reflect prevalent industry practice for part 25 manufacturers; consequently, there **are** no significant incremental costs expected. One ARAC member, a manufacturer of part 25 small airplanes, however, indicated that its current designs do not meet this requirement and that costs for cockpit indication in future designs would in fact be incremental. The manufacturer, however, did not provide such costs to the FAA. The FAA invites that manufacturer (and/or other interested parties) to provide detailed cost estimates during the public comment period.

Proposal 8. The title "Antiskid **system**" would be **added** to § 25.735(e) and the current text, " no single probable malfunction will result in a hazardous loss of braking ability or directional control of the **airplane,**" deleted. This requirement is adequately covered by § 25.1309 and the current § 25.735(e) is superfluous. In order to facilitate the introduction of the new **proposed §§ 25.735(e) (1) and (2)** (see proposals 9 and 10 below), the remaining current text would be revised to read, "**(e)** Antiskid system. If an antiskid system is installed, the system must be designed so that: . . . ." The proposed changes **are** editorial in nature and would not result in any incremental costs.

Proposal 9. A new § 25.735(e) (1) would be added requiring that " the antiskid system shall operate satisfactorily **over** the range of expected runway conditions, without external adjustment." The intent and content of this change is currently included in FAA Order 8110.8, " Engineering Flight Test Guide for Transport Category Airplanes," as interpretative material and acceptable means of compliance and is considered by both the airplane manufacturers and the regulatory authorities **as a** standard industry practice; therefore, this proposal would not result in any incremental costs.

Proposal 10. A new § 25.735(e) (2) would be added requiring that "**the** antiskid system must have priority over the automatic braking system at all **times.**" The intent and content of the proposed **change** is also currently included in FAA Order 8110.8, " Engineering Flight Test Guide for Transport **Category** Airplanes," as interpretative material and acceptable means of compliance and considered by both the airplane manufacturers and the regulatory authorities as **a** standard industry practice; therefore, this proposal would not result in any incremental costs.

Proposal 11. Section 25.735(f) would be amended by adding the title "Kinetic energy **capacity**", by consolidating the requirements of current paragraphs **(f) and (h)** , by adding similar requirements for a high energy landing **condition, and** by revising the text as follows: "**The** design landing **stop**, the maximum kinetic energy accelerate-stop, and the most severe landing stop brake kinetic energy absorption requirements of each wheel and brake assembly shall be determined. It shall be substantiated by dynamometer

testing that, at the declared full-y worn limit(s) of the brake heat sink, the wheel and brake assemblies shall be capable of absorbing not less than these levels of kinetic energy. Energy absorption rates defined by the airplane manufacturer must be achieved. These rates must be equivalent to mean decelerations not less than 10 **fps<sup>2</sup>** for the design landing stop and 6 **fps<sup>2</sup>** for the maximum kinetic energy accelerate stop.\*' (Design landing stop is an operational landing stop at maximum landing weight. Maximum kinetic energy accelerate-stop is a rejected takeoff for the most critical combination of airplane takeoff weight and speed. Most severe landing stop is a stop at the most critical combination of airplane landing weight and speed. The most severe landing stop need not be considered for extremely improbable failure conditions or if the maximum kinetic energy accelerate-stop energy is more severe) .

The current paragraphs **(f)** and **(h)** state that the brake kinetic energy capacity ratings may not be less than the determined energy absorption requirements. The proposed **paragraph (f)** would require the calculation of the necessary energy absorption capacity, and require dynamometer test substantiation of the capability of the wheel and brake assemblies to absorb the energy at not less than specified rates. The proposed change would encompass the requirements of current paragraph **(h)** without the need for complete **duplication of text**. The term "rejected takeoff" used under current paragraph **(h)** would be replaced with **\*\*accelerate-stop\*\*** for compatibility with **§ 25.109** terminology; **and** the term **\*\*most severe landing stop"** (MSL) would be added to address **cases** such as emergency return to land after takeoff, where

the brake energy for a flaps up landing may exceed that corresponding to the accelerate-stop energy.

One ARAC member, a manufacturer of part 25 **large** airplanes, notes that the average impact of the 10% residual RTO energy requirement would be a two to three percent increase in the brake's energy absorption requirements.

Notwithstanding, this increase is smaller than the tolerances on its ability to define brake requirements and the brake manufacturer's conformance to the specifications. Also, higher residual energies would enable the manufacturer to raise its recommended brake temperatures for dispatch, so any potential higher brake costs would be offset by more efficient aircraft operation (shorter turnaround times, less time at gate waiting for brakes to cool).

The MSL requirement, while a new FAA requirement, has been in effect in Europe (per British **CAA**); consequently, many large part 25 airplane manufacturers currently meet this standard. Notwithstanding, large part 25 airframe and brake manufacturers note that in almost all cases either the MSL stop energy would not exceed the maximum kinetic energy accelerate-stop energy or, the MSL stop condition is extremely improbable. One part 25 large airplane manufacturer, however, noted that demonstrating adherence to this requirement for its typical airplane model would add the equivalent of two additional high energy dynamometer tests in which the test brake would be destroyed; estimated incremental one-time costs for this equal approximately \$60,000 per type certification. Another manufacturer, however, estimates only one test in the \$20,000 - \$40,000 range. Manufacturers of small part 25 airplanes would

experience incremental one-time testing costs totaling approximately \$20,000 per type certification.

The aforementioned nonrecurring costs for either the part 25 large or small airplane type certification would easily be offset by the harmonization cost savings cited earlier. Any potential safety benefits from avoiding even one minor accident would add to such benefits. The FAA, therefore, finds proposal **11** to be cost beneficial.

Proposal 12. The current **§ 25.735(g)** would be removed. This requirement implicitly states that when setting up the dynamometer test inertia, an increase in the initial brake application speed is not a permissible method of accounting for a reduced (i.e., lower than ideal) dynamometer mass. The proposed change consolidates existing requirements and deletes redundant wording, and therefore would not impact current requirements; there are no costs associated with this change.

Proposal 13. A new **§ 25.735(g)**, " Brake condition after high kinetic energy dynamometer stop(s) , " would be added reading as follows: "**Following** the high kinetic energy stop demonstration(s) required by paragraph (f) of this section, with the parking brake promptly and fully applied for at least three (3) minutes, it shall be demonstrated that for at least five (5) minutes from application of the parking brake, no condition occurs (or has occurred during the stop), including fire associated with the tire or wheel and brake

assembly, that could prejudice the safe and complete evacuation of the airplane."

Paragraph (g) would require that the parking brake be applied for a minimum of three minutes without specifying a level of effectiveness to be demonstrated, due to the practicalities of such a demonstration. Three minutes is considered to be the minimum period of time required to cover the brake's ability to maintain the airplane in a stationary condition to allow a safe evacuation. On the basis that an evacuation may be determined as prudent or necessary, and that such an evacuation must be capable of completion, irrespective of the timely response of the emergency services, five minutes would **appear** to be a reasonable period of time for the associated brake **systems and** equipment to remain free from conditions that might prejudice or jeopardize the evacuation. The proposed changes provide for the additional demonstration of a **safe** condition following high energy absorption by the wheels and brakes, which **was** not previously required. Although previously approved brakes may have been able to comply with the requirement, approval could not have been refused had this not been the **case**. It is therefore believed that the proposed changes would provide a potential enhancement of the current level of safety in the rare **case** of non-compliance. It is expected **that brake systems** in newly certificated airplanes would meet this proposed standard at negligible additional costs.

Proposal 14. A modified version of the current JAR 25.735 (i) would be added to the FAR **as** new § 25.735(h), "**Stored** energy systems," to read as

follows: " If **a** stored energy system is used to show compliance with paragraph (b) (1) of this section, the available stored energy shall be sufficient for: (1) At least six full applications of the brakes when no antiskid system would be operating, and, (2) bringing the airplane to a complete stop when an antiskid system would be operating, under all runway surface conditions for which the airplane is certificated. An indication to the flightcrew of usable stored energy must be provided."

The proposed rule would require **a** measure of the stored energy, rather than pressure, to be presented to the flightcrew. The minimum level of stored energy required for the emergency/standby braking means would be presented as **a** requirement rather than as advisory material. In the majority of **cases**, this material **has** been used **as a** virtual requirement in the past by airplane manufacturers and regulatory authorities. As this requirement reflects current industry practice for most part 25 manufacturers, there would be no expected incremental costs associated with it. However, the same manufacturer (of part 25 small airplanes) that reported potential costs for proposal 7, also indicated that its current designs do not include **usable** stored energy indication and compliance with this requirement in future designs would impose incremental costs; **detailed** cost estimates, however, were not provided. The FAA requests that the manufacturer (or others) provide detailed cost estimates during the public comment period.

Proposal 15. A new **§** 25.735(i), "**Brake** wear indicators," would be added to read as follows: " Means shall be provided for each brake assembly to

indicate when the heat sink is worn to the permissible limit. The means must be reliable and readily visible." In order to ensure, as far as is practicable, that the brake heat sink is not worn beyond its allowable wear limits throughout its operational life, it is considered necessary to provide **some** device that can readily identify the fully worn limit of the heat sink.

The proposal reflects a requirement included in a series of airworthiness directives issued between 1989 and 1994 to require establishment of brake wear limits and to provide means to indicate the same. The British Civil Aviation Authority (CAA) Specification No. 17, also specifies the provision of such **an** indicator and the majority of **wheel** and brake assembly designs include such a device. As this requirement reflects current industry practice, there would be no incremental costs associated with it.

Proposal 16. Three new provisions would be added: (1) § 25.735(j), "Overtemperature burst prevention," requiring that "Means shall be provided in each braked wheel to prevent wheel and tire bursts that may result from **elevated** brake temperatures. Additionally, all wheels must meet the requirements of § 25.731(d);" (2) § 25.731(d), "Overpressure burst prevention," requiring **that** "Means shall be provided in each wheel to prevent wheel **and** tire bursts that may result from excessive pressurization of the wheel and tire assembly;" (3) § 25.731(e), "Braked wheels," requiring that "Each braked wheel shall meet the applicable requirements of § 25.735."

With respect to § 25.735(j), there is an existing requirement (§ 25.729(f)) related to the protection of equipment in wheel wells against the effects of bursting tires and a similar requirement is stated in TSO-C26c - Wheels and Wheel-Brake Assemblies. JAR 25.729(f) requires protection of equipment on the landing gear and in wheel wells against tire burst and elevated brake temperatures and a similar requirement is stated in the "Minimum Operational Performance Specification for Wheels and Brakes on JAR Part 25 Civil **Aeroplanes**" (document ED-69). However, there is no direct requirement in either 14 CFR part 25 or in JAR 25 that means must be provided to prevent wheel and tire bursts which could result from elevated brake temperatures. As a result, it has become an industry practice to incorporate pressure **release** device(s) , which function **as** a result of elevated wheel temperatures to deflate the tires. Nevertheless, it is believed to be both reasonable and prudent that such a requirement should be clearly stated in the paragraph related to airplane brakes and braking systems. The proposed requirement for temperature activated devices would not impact the current level of safety. Applicable advisory information would be included in proposed AC 25.735-1X.

With respect to the need for **§ 25.731(d)**, wheel and tire burst due to overinflation presents a hazard to ground personnel and the airplane. Certain airplane manufacturers require wheel pressure release devices which reduce this **hazard**. Incorporation of pressure release devices in tire inflation equipment is not considered adequate as a result of a history of misuse causing serious injuries and fatalities. Installation in the wheel reduces the potential for tampering or misuse, ensuring proper levels of protection and enhanced safety. **In the last** several years, wheel manufacturers have

included the devices in all new production wheels in order to avoid potential liability. Codification of existing industry practice would ensure that the enhanced level of safety is retained. There are no expected incremental costs associated with this proposal since it does reflect current industry practice. However, the same manufacturer (of part 25 small airplanes) that, in contrast to other manufacturers, reported potential costs for proposals 7, and 14, indicated that the requirement for wheel pressure release devices would also impose incremental costs in future designs. Again, the FAA invites that manufacturer (or others) to provide detailed cost estimates during the public comment period.

Since § 25.731 contains regulations applicable to all part 25 airplane wheels, new § 25.731(e) is added to provide a cross-reference to the additional requirements for braked wheels contained in § 25.735. There are no incremental costs associated with this change.

Proposal 17. The FAA proposes to add a new § 25.735(k), "Compatibility," to read as follows: "Compatibility of the wheel and brake assemblies with the airplane and its systems must be substantiated." Reliable and consistent brake system performance can be adversely affected by incompatibilities within the system and with the landing gear and the airplane. As part of the overall substantiation of safe and anomaly free operation, it is necessary to show that no **unsafe** conditions arise from incompatibilities between the brakes and brake system with other airplane systems and structures. **Areas** such as antiskid tuning, landing gear dynamics, tire type and size, brake

combinations, brake characteristics, brake and landing gear vibrations, etc. need to be explored and corrected if necessary. Therefore, this requirement is introduced to address these issues which are normally covered by airplane manufacturers during development of the airplane and must be addressed by modifiers of the equipment. Wheel and airplane manufacturers contacted reported that compatibility of newer model wheel and brake assemblies with other airplane systems has been assured in recent certifications. Codification of existing industry practice would ensure that the current level of safety is retained. There are no expected incremental costs associated with this proposal since it does reflect current industry practice.

#### IV. Summary of Costs and Benefits

As delineated above, the FAA concludes that only proposal 11 would result in incremental costs attributable to the subject proposal. Demonstrating adherence to the MSL requirement would increase nonrecurring testing costs from \$20,000 - \$60,000 for a part 25 large airplane type certification; the amount for a part 25 small airplane type certification is estimated to be \$20,000. According to one manufacturer, cost savings from harmonization, in terms of avoiding added costs of coordination and documentation (with the JAA, and involving, for example, additional travel overseas, reports, etc.), would be **equal** to **or greater** than the maximum incremental cost of \$60,000.

Potential **safety** benefits resulting from specification of minimum accepted standards would supplement these cost-savings. Although there were numerous (**approx. 170**) accidents involving brake failures during landings in the period

1982-1995, none were determined to have been directly preventable by the subject provisions. Different designs in future type certifications, however, could present other problems (unexpected) and raise future accident rates. This proposed rule is expected to reduce the chances of future accidents by codifying in the FARS (and therefore making mandatory) what was prevailing, but not necessarily universal, industry practice.

**For** the reasons specified, the FAA finds the proposed rule to be **cost-**beneficial.

#### V. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (**RFA**) establishes " **as a** principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements **to** the **scale** of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory **proposals and** to explain the rationale for their actions. The Act covers **a** wide-range of small entities, including small businesses, **not-for-profit organizations and** small governmental jurisdictions.

Agencies must perform **a** review to determine whether a proposed or final rule will have **a** significant economic impact on **a** substantial number of small

entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis as described in the Act. However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 act provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The proposed rule would affect manufacturers of part 25 transport category airplanes produced under future new airplane type certifications. For manufacturers, a small entity is one with 1,500 or fewer employees. No part 25 airplane manufacturer has 1,500 or fewer employees. Notwithstanding, the relatively low annualized incremental certification costs are not considered significant within the meaning of the RFA. Consequently, the FAA certifies that the proposed rule would not have a "significant economic impact on a substantial number of small entities" (manufacturers).

#### VI. International Trade Impact Assessment

Consistent with the Administration's belief in the general superiority, desirability, and efficacy of free trade, it is the policy of the Administrator to remove or diminish, to the extent feasible, barriers to international trade, including both barriers affecting the export of American

goods and services to foreign countries and those affecting the import of foreign goods and services into the United States.

In accordance with that policy, the FAA is committed to develop as much as possible its aviation standards and practices in harmony with its trading partners. Significant cost savings can result from this, both to United States' companies doing business in foreign markets, and foreign companies doing business in the United States.

This proposed rule is a direct action to respond to this policy by increasing the harmonization of the U.S. Federal Aviation Regulations with the European Joint Aviation Requirements. The result would be a positive step toward removing impediments to international trade.

#### VII. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (the Act), enacted as Pub. L. 104-4 on March 22, 1995, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more (adjusted annually for inflation) in any one year. Section 204(a) of the Act, 2 U.S.C. 1534 (a), requires the

Federal agency to develop an effective process to permit timely input by elected officers (or their designees) of State, local, and tribal governments on a proposed "significant intergovernmental mandate." A "significant intergovernmental mandate" under the Act is any provision in a Federal agency regulation that will impose an enforceable duty upon State, local, and tribal governments, in the aggregate, of \$100 million (adjusted annually for inflation) in any one year. Section 203 of the Act, 2 U.S.C. 1533, which supplements section 204(a), provides that before establishing any regulatory requirements that might significantly or uniquely affect small governments, the agency shall have developed a plan that, among other things, provides for notice to potentially affected small governments, if any, and for a meaningful and timely opportunity to provide input in the development **of** regulatory proposals.

The FAA determines that this proposed rule does not contain a significant intergovernmental or private sector mandate as defined by the Act.