Federal Aviation Administration – Regulations and Policies
Aviation Rulemaking Advisory Committee

Rotorcraft Issue Area
Harmonization of Miscellaneous Rotorcraft Regulations Working Group

Task 1 – Pilot Indication of Autopilot Operating Mode

Task Assignment

[Federal Register: January 20, 1995 (Volume 60, Number 13)]
[Notices]
[Page 4221-4222]
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DEPARTMENT OF TRANSPORTATION

Aviation Rulemaking Advisory Committee; Harmonization of Miscellaneous Rotorcraft Regulations Working Group

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group.

SUMMARY: Notice is given of the establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group and new tasks assigned to the Aviation Rulemaking Advisory Committee (ARAC). This notice informs the public of the activities of ARAC.

FOR FURTHER INFORMATION CONTACT:
Mr. Mark Schilling, Manager, Rotorcraft Standards Staff, 2601 Meacham Boulevard, Fort Worth, Texas, telephone number (817) 222-5110.

SUPPLEMENTARY INFORMATION: The Federal Aviation Administration (**FAA**) has established an Aviation Rulemaking Advisory Committee (ARAC) (56 FR 2190, January 22, 1991; and 58 FR 9230, February 19, 1993). One area the ARAC deals with is rotorcraft issues. These issues involve the airworthiness standards for normal and transport category rotorcraft in parts 27 and 29 of the Federal Aviation Regulations, which are the responsibility of the Director, Aircraft Certification Service, **FAA**. [[Page 4222]]

Tasks

The Harmonization of Miscellaneous Rotorcraft Regulations Working Group is charged with recommending to ARAC new or revised requirements for pilot indication of autopilot operating mode; burn test for electrical wire; seats, berths, and litters; and other rotorcraft issues. The products of this exercise are intended to be harmonized standards, acceptable to both the **FAA** and the Joint Aviation Authorities.

Specifically, the tasks are as follows:

1. Review Title 14 Code of Federal Regulations, Secs. 27.1329 and 29.1329, and supporting policy and guidance material for the purpose of determining the course of action to be taken for rulemaking and/or policy relative to the issue of requiring pilot indication of autopilot operating mode similar to parts 23 and 25 requirements.

2. Review parts 27 and 29 to determine if clarification is needed for the burn test requirements for transport category rotorcraft and

whether a new requirement for burn test for electrical wire for normal category rotorcraft is needed. Consider whether Sec. 29.1351(d)(3) should be deleted and if new Secs. 27.1365(c) and 29.1359(c) should be created to specify electrical wire insulation burn test requirements.

3. Review Secs. 27.785(f)(2) and 29.785(f)(2) to determine if these sections should be revised to specify whether the 1.33 fitting factor for seats should also apply to berths and litters.

4. Review and make recommendations regarding the disharmonizations introduced by the New Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings and the Rotorcraft Crash Resistant Fuel Systems final rules.

ARAC recommendations to the **FAA** should be accomplished by appropriate documents. Recommendations for rulemaking should be accompanied by a complete draft of the notice(s) of proposed rulemaking, including the benefit/cost analysis and other required analyses. Recommendations for the issuance of guidance material should be accompanied by a complete draft advisory circular. ARAC has formed the Harmonization of Miscellaneous Rotorcraft Regulations Working Group to analyze and recommend to it solutions to issues contained in the assigned tasks. If ARAC accepts the working group's recommendations, it forwards them to the **FAA**.

ARAC working groups are comprised of technical experts on the subject matter. A working group member need not necessarily be a representative of one of the member organizations of ARAC. An individual who has expertise in the subject matter and wishes to become a member of the working group should write the person listed under the caption FOR FURTHER INFORMATION CONTACT expressing that desire, describing his or her interest in the task, and the expertise he or she would bring to the working group. The request will be reviewed by the assistant chair and working group leader, and the individual will be advised whether or not the request can be accommodated.

Working Group Reports

Each working group formed to consider ARAC tasks is expected to comply with the procedures adopted by ARAC and given to the working group chair. As part of the procedures, the working group is expected to:

A. Recommend time line(s) for completion of the tasks, including rationale, for consideration at the meeting of the ARAC to consider rotorcraft issues held following publication of this notice.

B. Give a detailed conceptual presentation on the tasks to the ARAC before proceeding with the work stated under item C below.

C. Give a status report on the tasks at each meeting of ARAC held to consider rotorcraft issues.

The Secretary of Transportation has determined that the formation and use of the ARAC are necessary in the public interest in connection with the performance of duties imposed on the **FAA** by law. Meetings of ARAC will be open to the public except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on January 13, 1995.

Chris A. Christie,

Executive Director, Aviation Rulemaking Advisory Committee.
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BILLING CODE 4910-13-M

Recommendation Letter

Action: ARM
AVR-1 Signature

Helicopter
Association
International

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Responses may be
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1101 Naugatuck Avenue
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October 3, 1996

Mr. Barry L. Valentine
Acting Associate Administrator for Regulation
and Certification (AVR-1)
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Dear Mr. Valentine:

The January 20, 1995 issue of the "Federal Register" announced the development of a task for the Aviation Rulemaking Advisory Committee (ARAC) pertaining to the "Harmonization of Miscellaneous Rotorcraft Regulations" and the formation of a Working Group to resolve the assigned task. The results of the efforts of that Group have been submitted to the ARAC for review. As a consequence, the ARAC has examined those results and, at a public meeting held on October 3, 1996, approved them.

Accordingly, the ARAC hereby submits the following material on the subject and recommends that the draft NPRM be processed for publication:

- A draft Notice of Proposed Rulemaking
- An "Executive Summary" prepared by the Manager, Rotorcraft Directorate (ASW-100) with the concurrence of the Assistant General Counsel (ASW-7).

- The "Preliminary Regulatory Evaluation, Initial Regulatory Flexibility Determination, and Trade Impact Assessment" for the above noted NPRM.

Very truly yours,

T. E. Dumont
ARAC Assistant Chair for Rotorcraft Issues

cc: Steven J. Brown, Chair, ARAC
Chris A. Christie, Executive Director, ARAC
Mark R. Schilling, ARAC Assistant Executive Director
Gifford A. Marr, Chair, ARAC Harmonization of Miscellaneous Rotorcraft Regulations Working Group
Frank L. Jensen, Jr., President, HAI

Recommendation

[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No. ; Notice No.]

RIN:

Harmonization of Miscellaneous Rotorcraft Regulations

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This notice proposes changes to the type certification requirements for normal and transport category rotorcraft. The changes would amend the airworthiness standards to require a cockpit indication of autopilot operating mode to the pilots for certain autopilot configurations, to clarify the burn test requirements for electrical wiring for transport category rotorcraft, and to provide a new requirement for an electrical wire burn test for normal category rotorcraft. The proposed rule would also add a 1.33 fitting factor structural strength requirement to the attachment of litters and berths. The proposed changes to 14 CFR parts 27 and 29 (parts 27 and 29) are harmonized with the European Joint Aviation Requirements (JAR) 27 and 29.

DATES: Comments must be received on or before [insert date 90 days after date of publication in the Federal Register].

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Office of the Chief Counsel, Attention: Rules Docket (AGC-200), Docket No. ; Room 915G, 800 Independence Avenue SW, Washington, DC 20591. Comments submitted must be marked Docket No. . Comments may also be sent electronically to the following internet address: nprmcmts@mail.hq.faa.gov. Comments may be examined in Room 915G weekdays between 8:30 a.m. and 5:00 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. Carroll Wright, Regulations Group, ASW-111, Rotorcraft Directorate, Aircraft Certification Service, FAA, Fort Worth, Texas 76193-0111, telephone (817) 222-5120.

SUPPLEMENTARY INFORMATION:

Comments Invited

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. Comments relating to the environmental, energy, federalism, or economic impact that might result from adopting the proposals in this notice are also invited. Substantive comments should be accompanied by cost estimates. Comments must identify the regulatory docket or notice number and be submitted in triplicate to the Rules Docket at the address specified under the caption "ADDRESSES."

All comments received, as well as a report summarizing each substantive public contact with FAA personnel on this rulemaking, will be filed in the docket. The docket is available for public inspection before and after the comment closing date.

All comments received on or before the closing date will be considered before taking action on this proposal. Late-filed comments will be considered to the extent practicable. The proposals contained in this notice may be changed in light of the comments received.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a preaddressed, stamped postcard on which the following statement is made: "Comments to Docket No. ." The postcard will be date stamped and mailed to the commenter.

Availability of NPRM's

Using a modem and suitable communications software, an electronic copy of this document may be downloaded from the FAA regulations section of the Fedworld

electronic bulletin board service (telephone: 703-321-3339), the Federal Register's electronic bulletin board service (telephone: 202-512-1661), or the FAA's Aviation Rulemaking Advisory Committee Bulletin Board service (telephone: 202-267-5948).

Internet users may reach the FAA's web page at http://www.faa.gov or the Federal Register's webpage at http://www.access.gpo.gov/su_docs for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Office of Rulemaking, ARM-1, 800 Independence Avenue, SW, Washington, DC 20591, or by calling (202) 267-9680. Communications must identify the notice number of this NPRM.

Persons interested in being placed on a mailing list for future NPRM's should request from the above office a copy of Advisory Circular No. 11-2A, NPRM Distribution System, that describes the application procedure.

Background

The FAA has established an Aviation Rulemaking Advisory Committee (ARAC). By a notice in the Federal Register (60 FR 4221, January 20, 1995), the FAA announced the establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group. The Working Group was tasked to recommend to ARAC new or revised requirements for pilot indication of autopilot operating mode; burn test for electrical wire; seats, berths, and litters; and other rotorcraft issues.

Specifically, the working group received the following tasks:

1. Review §§ 27.1329 and 29.1329 and supporting policy and guidance material for the purpose of determining the course of action to be taken for rulemaking and/or policy relative to the issue of requiring pilot indication of autopilot operating mode similar to parts 23 and 25 requirements.

2. Review parts 27 and 29 to determine if clarification is needed for the burn test requirements for transport category and whether a new requirement for burn test for electrical wire for normal category rotorcraft is needed. Consider whether § 29.1351(d)(3) should be deleted and if new §§ 27.1365(c) and 29.1359(c) should be created to specify electrical wire insulation burn test requirements.

3. Review §§ 27.785(f)(2) and 29.785(f)(2) to determine if these sections should be revised to specify whether the 1.33 fitting factor for seats should also apply to berths and litters.

4. Review and make recommendations regarding the disharmonizations introduced by the new Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings (OEI) (59 FR 47764; September 16, 1994) and the Crash Resistant Fuel Systems (CRFS) in Normal and Transport Category Rotorcraft (59 FR 50380; October 3, 1994) final rules.

The working group included representatives from four major rotorcraft manufacturers (normal and transport) and representatives from Aerospace Industries Association of America, Inc. (AIA), Association Europeene des Constructeurs de Material Aerospatial (AECMA), Helicopter Association International (HAI), the European Joint Aviation Authorities (JAA), and the FAA Rotorcraft Directorate. This broad participation is consistent with FAA policy to involve all known interested parties as early as practicable in the rulemaking process.

The working group presented its findings to the ARAC, which recommended to the FAA that certain miscellaneous changes be made to the airworthiness standards for both parts 27 and 29.

The FAA has evaluated and accepted the ARAC recommendations and proposes the changes contained in this notice.

General Discussion of the Proposals

The following changes are proposed to the airworthiness standards for normal and transport category rotorcraft:

Sections 27.625 and 29.625 Fitting Factors

A new paragraph (d) would be added to §§ 27.625 and 29.625 to require that the 1.33 fitting factor, specified in §§ 27.785 and 29.785 for the attachment of seats also applies to the attachment for litters and berths. The 1.33 fitting factor is necessary to ensure that fittings subject to wear and tear under normal use and subject to frequent removal and replacement in the aircraft will retain adequate strength to perform their intended function under crash landing conditions. The need for this factor for seat attachments and associated harnesses has been substantiated by service experience and is recognized in 14 CFR parts 23, 25, 27, and 29 and in the equivalent JAR. Also, the need for the 1.33 factor for the attachment of litters, berths, and associated harnesses is included in parts 23 and 25 and JAR 23 and 25 but is not currently included in parts 27 and 29 or JAR 27 and 29. This proposed change would provide the same level of safety for passengers in litters and berths as in seats and would harmonize the fitting factor requirement of parts 23, 25, 27, 29 and the JAR.

Sections 27.785 and 29.785 Seats, berths, litters, safety belts, and harnesses

Since the requirements for litters and berths are specified in §§ 27.785(k) and 29.785(k), a new sentence to paragraph (k)(2) is proposed to clarify the requirement for applying the 1.33 fitting factor. This proposed revision would clarify that the 1.33 fitting factor for the attachment of seats specified in proposed §§ 27.625(d) and 29.625(d) also applies to the attachment of litters and berths.

Sections 27.975 and 29.975 Fuel tank vents

This proposed revision would remove the phrase "unless a rollover is shown to be extremely remote" from §§ 27.975(b) and 29.975(a)(7). The JAA states that the phrase

"unless a rollover is shown to be extremely remote" results in weakening the desired requirement, so that a postcrash fire could occur on an aircraft not equipped with rollover protection. The FAA agrees that the intent of this rule is to prevent postcrash fires due to rollover and concludes that the subject phrase does not contribute to the desired result. Also, this proposed revision would resolve a difference between parts 27 and 29 and JAR 27 and 29 introduced by the CRFS rule.

Sections 27.1329 and 29.1329 Automatic pilot system

A new paragraph (f) would be added to §§ 27.1329 and 29.1329 to require display of the autopilot mode to the pilots. Current parts 23 and 25 require that "If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the flight crew the current mode of operation. Selector switch position is not acceptable as a means of indication." Airplane accidents occurred prior to adoption of the requirement of the display of the autopilot mode in parts 23 and 25 due to the pilot not being aware of the current autopilot mode. This type of accident could occur in rotorcraft. Safety will be enhanced by requiring that the autopilot mode be displayed to the pilots of rotorcraft. This would harmonize parts 27 and 29 with the corresponding JAR.

Section 27.1365 Electric cables

A new paragraph (c) to § 27.1365 is proposed that would add a burn test to require self-extinguishing insulation on electrical wire and cable installed in normal category rotorcraft. Most European and U.S. rotorcraft manufacturers currently use electrical wire that meets the proposed burn test requirements. This proposal would require that compliant wire be used.

Section 29.923 Rotor drive system and control mechanism tests

The proposed revision to § 29.923(a) would add the words, "and (p)," after the words "paragraphs (b) through (n)." The "and p" was inadvertently omitted in the OEI

final rule, Amendment 29-35. This change is proposed to correct the oversight and to harmonize part 29 with the JAR requirement.

Section 29.1351 General

The proposal would delete the burn test requirements of § 29.1351(d)(1)(iii) and remove the reference to § 25.1359(d). Section 25.1359(d) was removed from part 25 by Amendment 25-72 (55 FR 29756; July 20, 1990). The proposal would move the electrical wire burn test requirements to a new § 29.1359(c) and cite the correct reference, part 25, Appendix F, Part I(a)(3). The proposed change is administrative and will not alter the current requirements.

Section 29.1359 Electrical system fire and smoke protection

As discussed in the previous paragraph, new § 29.1359(c) would contain the electrical wire burn test requirements. The proposal would add paragraph (c) to this section to place the requirement under a more appropriate heading. The proposed change is administrative and will not alter the current requirements.

Paperwork Reduction Act

There are no requirements for information collection associated with this proposed rule that would require approval under the Paperwork Reduction Act of 1980 (Pub. L. 96-511).

Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 impact of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the

FAA has determined that this proposed rule: (1) would generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; (2) is not "significant" as defined in DOT's Regulatory Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and (4) would lessen restraints on international trade. These analyses, available in the docket, are summarized below.

Economic Evaluation

Overall, the proposed changes would result in net cost savings by promoting harmonization between the U.S. regulations and the JAR and by eliminating unnecessary duplication of certification requirements. The costs and benefits of the changes regarding the fitting factor for the attachment of berths and litters, removal of the phrase "unless a rollover is shown to be extremely remote" (in §§ 27.975(b) and 29.975(a)(7)), autopilot operating mode, and burn test for electrical wire in normal category rotorcraft, are summarized below. All other revisions involve clarification or administrative changes.

The fitting factor requirement would not impose incremental costs on most rotorcraft manufacturers. One small manufacturer of part 27 rotorcraft indicated additional nonrecurring testing and analysis costs of $2,000 to substantiate the 1.33 factor in an initial new type certification; most likely, this additional cost would not be incurred in subsequent type certifications. Although there have been no identifiable accidents involving litters attributable to insufficient attachment strength, even one minor injury would far exceed the relatively low costs. Codification of the 1.33 fitting factor, which is inherent in most current designs, would ensure that all future designs include this standard, increasing the minimum level of safety.

There would be no incremental costs or benefits associated with removal of the phrase "unless a rollover is shown to be extremely remote" in §§ 27.975(b) and

29.975(a)(7) since rotorcraft currently meet the minimum fuel spillage requirements under roll-over conditions.

The autopilot display requirement would impose no or insignificant incremental costs on rotorcraft manufacturers since new autopilot systems employed in rotorcraft are similar to those in airplanes and the mode indicator is typically integral to such systems. Codification of this requirement would ensure that all future rotorcraft designs comply with this standard.

Most U.S. and European manufacturers currently use electrical wire that meets the burn test requirements for transport category rotorcraft since they produce both parts 27 and 29 rotorcraft. However, the few manufacturers that produce normal category rotorcraft only would likely experience additional costs. One manufacturer estimates additional nonrecurring testing/design costs at $5,000 per type certification and additional wiring costs of $500 per rotorcraft. At an estimated production of seven rotorcraft per year, the incremental recurring costs would total $3,500 per year for 10 years, or $35,000 total (nondiscounted 1995 dollars), under one type certification. Another manufacturer estimates additional wiring costs of approximately $350 per rotorcraft and no additional nonrecurring costs. At an estimated production of 20 rotorcraft per year, the incremental recurring costs would total $7,000 per year for 10 years, or $70,000 total (nondiscounted 1995 dollars), under one type certification.

There have been several accidents (and more numerous Service Difficulty Reports) related directly or indirectly to shorted or burned-through electrical wiring; i.e., the insulation offered insufficient protection. Examination of National Transportation Safety Board accident and incident data for the period 1983 through 1995 indicates one accident (in June 1994) caused primarily by a short in the electric wiring that burned a hole in the main fuel line. The post-impact fire destroyed the normal category helicopter. There is a strong possibility that the proposed burn test requirements could

have prevented this accident. Benefits in terms of averted equipment damage and just one or two minor injuries from an accident involving a part 27 rotorcraft would easily exceed the incremental costs of this proposal. Codification of this requirement would ensure that all future designs comply, increasing the minimum level of safety.

Based on the findings of no significant incremental costs coupled with the benefits of harmonization savings and higher levels of safety, the FAA has determined that the proposed rule would be cost-beneficial.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed or final rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size, "significant economic impact" in terms of annualized costs, and "substantial number" as a number that is not less than 11 and which is more than one-third of the small entities subject to a proposed or final rule.

The proposed rule would affect manufacturers of future type-certificated normal and transport category rotorcraft. For aircraft manufacturers, Order 2100.14A defines a small entity as one with 75 or fewer employees and a significant economic impact as annualized costs of at least $19,500 (1995 dollars). The FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers since (1) no part 29 and only two part 27 rotorcraft manufacturers have 75 or fewer employees, and (2) the annualized incremental costs of the rule are less than $19,500.

International Trade Impact Analysis

The proposed rule would not constitute a barrier to international trade, including the export of American rotorcraft to foreign countries and the import of foreign rotorcraft into the United States. Instead, the proposed changes on rotorcraft certification procedures, harmonized with those of the JAA, would lower dual certification costs, thereby enhancing free trade. Each applicant for a new type certificate for normal and transport category rotorcraft, whether the applicant be U.S. or foreign, will be required to show compliance with this rule.

Conclusion

For the reasons discussed above, including the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the Office of Information and Regulatory Affairs (OIRA) in conjunction with the FAA has determined that this proposed regulation is not a significant regulatory action under Executive Order 12866 and, therefore, is not subject to centralized regulatory review by the OIRA. In addition, the FAA certifies that this regulation will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This proposal is considered to be nonsignificant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). An initial regulatory evaluation of the proposal, including a Regulatory Flexibility Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

List of Subjects

14 CFR Part 27

Air transportation, Aircraft, Aviation safety, Rotorcraft, Safety.

14 CFR Part 29

Air transportation, Aircraft, Aviation safety, Rotorcraft, Safety.

THE PROPOSED AMENDMENTS

In consideration of the foregoing, the FAA proposes to amend 14 CFR parts 27 and 29 as follows:

PART 27 AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

1. The authority citation for part 27 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44704.

2. In § 27.625, a new paragraph (d) is added to read as follows:

§27.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt, and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in 27.561(b)(3) multiplied by a fitting factor of 1.33.

3. Section 27.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 27.785 Seats, berths, litters, safety belts, and harnesses.

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 27.625(d) shall be applied.

4. Section 27.975(b) is revised to read as follows:

§ 27.975 Fuel tank vents.

* * * * *

(b) The venting system must be designed to minimize spillage of fuel through the vents to an ignition source in the event of a rollover during landing, ground operation, or a survivable impact.

5. In § 27.1329 , a new paragraph (f) is added to read as follows:

§27.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicated to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

6. In § 27.1365, a new paragraph (c) is added to read as follows:

§27.1365 Electric cables.

* * * * *

(c) Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with part 25, Appendix F, Part I(a)(3).

PART 29--AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

7. The authority citation for part 29 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44704.

8. In § 29.625, a new paragraph (d) is added to read as follows:

§ 29.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in 29.561 (b)(3) multiplied by fitting factor of 1.33.

9. Section 29.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 29.785 Seats, berths, litters, safety belts, and harnesses

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 29.625(d) shall be applied.

10. In § 29.923(a), the first sentence of the introductory text is revised to read as follows:

§ 29.923 Rotor drive system and control mechanism tests.

(a) Endurance tests, general. Each rotor drive system and rotor control mechanism must be tested, as prescribed in paragraphs (b) through (n) and (p) of this section, for at least 200 hours plus the time required to meet the requirements of paragraphs (b)(2), (b)(3), and (k) of this section. * * *

* * * * *

11. Section 29.975(a)(7) is revised to read as follows:

§ 29.975 Fuel tank vents and carburetor vapor vents.

(a) * * *

(7) The venting system must be designed to minimize spillage of fuel through the vents to an ignition source in the event of a rollover during landing, ground operations, or a survivable impact.

* * * * *

12. In § 29.1329, a new paragraph (f) is added to read as follows:

§ 29.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

13. In § 29.1351, paragraph (d)(1)(iii) is removed.

§29.1351 General.

14. In § 29.1359, a new paragraph (c) is added to read as follows:

§ 29.1359 Electrical system fire and smoke protection.

* * * * *

c. Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with part 25, Appendix F, Part I(a)(3).

Issued in Washington, DC, on

EXECUTIVE SUMMARY

TITLE: Harmonization of Miscellaneous Rotorcraft Regulations; Notice of Proposed Rulemaking (NPRM)

SUMMARY: This NPRM will amend the airworthiness standards to increase the regulatory safety level and standardize terminology. The changes would (1) require a cockpit indication of autopilot operating mode to the pilots for certain autopilot configurations, (2) clarify the burn test requirements for electrical wiring for transport category rotorcraft, (3) provide a new requirement for an electrical wire burn test for normal category rotorcraft, (4) add a 1.33 fitting factor structural strength requirement to the attachment to litters and berths, and (5) add miscellaneous wording changes to harmonize 14 CFR parts 27 and 29 (parts 27 and 29) and the Joint Aviation Requirements (JAR) 27 and 29.

BACKGROUND: On January 20, 1995, the FAA issued a Notice in the Federal Register announcing the establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group. The working group included representatives from four major rotorcraft manufacturers (normal and transport) and representatives from Aerospace Industries Association of America, Inc. (AIA), Association Europeene des Constructeurs de Material Aerospatial (AECMA), Helicopter Association International (HAI), Joint Aviation Authorities, and the FAA Rotorcraft Directorate.

The FAA tasked the Working Group to recommend to ARAC new or revised requirements for pilot indication of autopilot operating mode; burn test for electrical wire; seats, berths, and litters; and other rotorcraft issues that included the disharmonizations that occurred between parts 27 and 29 and JAR 27 and 29 in the published Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings (49 FR 47764; September 16, 1994) and the Crash Resistant Fuel Systems (CRFS) in Normal and Transport Category Rotorcraft (59 FR 50380; October 3, 1994) final rules.

WHO WILL BE AFFECTED: Manufacturers, pilots, and occupants of normal and transport category rotorcraft.

COSTS AND BENEFITS: Overall, the proposed changes would result in net cost savings by promoting harmonization between FAA and JAA regulations and eliminating unnecessary duplication of certification requirements. Based on the findings of no significant incremental costs coupled with the benefits or harmonization savings and higher levels of safety, the FAA has determined that the proposed rule would be cost-beneficial

ENERGY IMPACT: The energy impact of the NPRM has been assessed in accordance with the Energy Policy and Conservation Act (EPCA), P.L. 94-163, and Interim Agency Guidelines. It has been determined that the NPRM is not a major regulatory action under the provisions of the EPCA.

ENVIRONMENTAL IMPACT: The environmental impact of the NPRM has been assessed in accordance with FAA Order 1050.1D, and it has been determined that the NPRM is not a major Federal action significantly affecting the environment.

Daniel P. Salvano
Manager, Rotorcraft Directorate
Aircraft Certification Service

U.S. Department
of Transportation

**FEDERAL AVIATION
ADMINISTRATION**
Washington, D.C. 20591

PRELIMINARY REGULATORY EVALUATION, INITIAL REGULATORY FLEXIBILITY DETERMINATION, AND TRADE IMPACT ASSESSMENT

FOR

NOTICE OF PROPOSED RULEMAKING:

HARMONIZATION OF MISCELLANEOUS ROTORCRAFT REGULATIONS

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 several proposed changes to parts 27 and 29 of the Federal Aviation Regulations (FAR). Part 27 prescribes airworthiness standards for type certification of normal category rotorcraft (maximum weight of 6,000 pounds) and part 29 prescribes corresponding standards for transport category rotorcraft. The proposed rule changes would: (1) require pilot indication of autopilot operating mode; (2) clarify the burn test requirements for electrical wire in transport category rotorcraft and provide similar requirements in normal category rotorcraft; (3) require that the 1.33 fitting factor for seats also apply to berths and litters; and (4) make miscellaneous wording changes based on standards adopted by the European Joint Aviation Authorities (JAA) for Joint Aviation Requirements (JAR) 27 and 29.

The proposed revisions would impose no incremental costs on manufacturers or operators of part 29 rotorcraft. For smaller manufacturers producing only part 27 rotorcraft, there would be incremental costs totaling between $40,000 and $70,000 (nondiscounted 1995 dollars) per type certification associated with one provision and $2,000 for another provision. Benefits of averted accidents and reduced certification costs associated with harmonized FAR/JAR requirements would easily exceed these costs.

The rule changes would not have a significant economic impact on small entities. In addition, they would not constitute a barrier to international trade, including the export of U.S. rotorcraft to foreign countries and the import of foreign rotorcraft into the United States. Instead, the changes would harmonize certification procedures of the Federal Aviation Administration (FAA) with those of the JAA and thereby lessen restraints on trade.

Regulatory Evaluation of Notice of Proposed Rulemaking (NPRM):

"Harmonization of Miscellaneous Rotorcraft Regulations"

I. Introduction

This Regulatory Evaluation examines the impacts of a Notice of Proposed Rulemaking (NPRM) that would change the type certification requirements for normal and transport category rotorcraft (Federal Aviation Regulations (FAR) parts 27 and 29) to: (1) require pilot indication of autopilot operating mode; (2) clarify the burn test requirements for electrical wire in transport category rotorcraft and provide similar requirements in normal category rotorcraft; (3) require that the 1.33 fitting factor for seats also apply to berths and litters; and (4) make miscellaneous wording changes based on standards adopted by the European Joint Aviation Authorities (JAA) for Joint Aviation Requirements (JAR) 27 and 29.

The changes would promote harmonization between Federal Aviation Administration (FAA) and JAA regulations. Harmonization would eliminate unnecessary duplication of certification requirements, thus reducing manufacturers' costs.

II. Background

The FAA established the Aviation Rulemaking Advisory Committee (ARAC) in February 1991 under the Federal Advisory Committee Act to provide

recommendations to the FAA on rulemaking related to aviation safety issues. The ARAC subsequently established the Rotorcraft Issues Group to deal with airworthiness standards for parts 27 and 29 rotorcraft. By a notice in the Federal Register (60 FR 4221, January 20, 1995), the FAA announced the establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group (WG) in the ARAC. The WG was tasked to recommend new or revised requirements for: pilot indication of autopilot operating mode; burn test for electrical wire; seats, berths, and litters; and other rotorcraft issues. The WG includes representatives from four major rotorcraft manufacturers and representatives from Aerospace Industries Association of America, Inc., Association Europeene des Constructeurs de Material Aerospatial, Helicopter Association International, JAA, and the FAA Rotorcraft Directorate. This broad participation is consistent with FAA policy to involve all known interested parties as early as practicable in the rulemaking process.

Specifically, the tasks assigned were as follows:

1. Review §§ 27.1329 and 29.1329, and supporting policy and guidance material to determine the course of action to be taken for rulemaking and/or policy relative to the issue of requiring pilot indication of autopilot operating mode similar to parts 23 and 25 requirements.

2. Review parts 27 and 29 to determine if clarification is needed for the burn test requirements for transport category rotorcraft and

whether a new requirement for burn test for electrical wire for normal category rotorcraft is needed. Consider whether § 29.1351(d)(3) should be deleted and if new §§ 27.1365(c) and 29.1359(c) should be created to specify electrical wire insulation burn test requirements.

3. Review §§ 27.785(f)(2) and 29.785(f)(2) to determine if these sections should be revised to specify whether the 1.33 fitting factor for seats should also apply to berths and litters.

4. Review and make recommendations regarding the disharmonizations introduced by the New Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings (OEI) (59 FR 47764; September 16, 1994) and the Crash Resistant Fuel Systems (CRFS) in Normal and Transport Category Rotorcraft (59 FR 50380; October 3, 1994) final rules.

As a result of the WG's research and recommendations on these tasks, the ARAC recommended rulemaking to the FAA. The FAA concurs and proposes the revisions to FAR parts 27 and 29 contained in this NPRM.

III. Amendments and Associated Costs and Benefits

A. Parallel changes to parts 27 and 29

1. Fitting factors; Seats, safety belts, and harnesses (Sections 27.625(d)/27.785(k)(2) and 29.625(d)/29.785(k)(2))

The proposed revision to these sections would require that the 1.33 fitting factor[1] for seats also apply to berths and litters. The 1.33 fitting factor is required to ensure that fittings subject to wear and tear due to normal use and frequent removal and replacement in the aircraft will retain adequate strength, in the worn condition, to perform their intended function under crash landing conditions. The need for this factor for seats and harnesses is recognized in FAR parts 23, 25, 27 and 29 and in the corresponding JAR parts. The need for the 1.33 factor for litters, berths and harnesses is recognized in parts 23 and 25 and JAR 23 and 25, but is not currently included in parts 27 and 29 and JAR 27 and 29. The proposed changes would provide the same level of safety for passengers in seats, litters, and berths and would harmonize the FAR and the JAR.

[1] A special factor of safety applied to each fitting (a part or terminal used to join one structural member to another). Certain factors of safety (applicable to external and inertia loads) must be multiplied by the highest pertinent special factor of safety (as prescribed in §§ 27.621-27.625 and 29.621-29.625) for each part of the structure whose strength is uncertain, likely to deteriorate in service before normal replacement, or subject to appreciable variability because of uncertainties in manufacturing processes or inspection methods.

This proposal would not impose incremental costs on most rotorcraft manufacturers. One small manufacturer of part 27 rotorcraft indicated additional nonrecurring testing and analysis costs of $2,000 to substantiate the 1.33 factor in an initial new type certification; most likely, this additional cost would not be incurred in subsequent type certifications.

Although there have been no identifiable accidents involving litters attributable to insufficient attachment strength, even one minor injury would far exceed the relatively low costs. Codification of the 1.33 fitting factor (inherent in most current designs) would ensure that all future designs include this standard, increasing the minimum level of safety.

2. Fuel tank vents and carburetor vapor vents (Sections 27.975 and 29.975)

The proposed revision to these sections would resolve a difference between FAR parts 27/29 and JAR 27/29 introduced by the CRFS final rule. The phrase "unless a rollover is shown to be extremely remote" in §§ 27.975(b) and 29.975(a)(7)[2] would be removed. The JAA suggests that the phrase results in weakening the intent of the requirement, which is to minimize the chances of a post-crash fire in the **event** of a rollover irrespective of the **likelihood** of a rollover occurring. There would be

[2] These provisions (both relating to fuel tank vents) require that "the venting system must be designed to minimize spillage of fuel through the vents to an ignition source in the event of a rollover during landing, ground operation or a survivable impact, unless a rollover is shown to be extremely remote."

no incremental costs or benefits associated with this change since rotorcraft currently meet the minimum fuel spillage requirements of this section.

3. Automatic pilot system (Sections 27.1329 and 29.1329)

A new paragraph (f) would be added to §§ 27.1329 and 29.1329 to require that autopilot operating mode be displayed to the crew. Current §§ 23.1329(h) and 25.1329(h) require that "If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the flight crew the current mode of operation. Selector switch position is not acceptable as a means of indication."

Airplane accidents have occurred due to the crew not being aware of the autopilot mode. A potential safety problem could be avoided by requiring that the autopilot mode be displayed to rotorcraft crews also (autopilot systems are relatively rare in rotorcraft). The proposal, which would harmonize parts 23, 25, 27 and 29 with the corresponding JAR, would not impose any incremental costs on rotorcraft manufacturers since new autopilot systems employed in rotorcraft are identical to those in airplanes and the mode indicator is now integral to such systems. Codification of this requirement would ensure that all future rotorcraft designs comply with this standard.

B. Separate changes to part 27 or part 29

1. Electric cables (Section 27.1365)

Section 27.1365(c) is proposed since part 27 does not contain burn test requirements for electrical wire. Most European and U.S. manufacturers currently use electrical wire that meets the burn test requirements for transport category rotorcraft since they produce both parts 27 and 29 rotorcraft. However, the few manufacturers that produce normal category rotorcraft only would likely experience additional costs. One manufacturer estimates additional nonrecurring testing/design costs at $5,000 per type certification and additional wiring costs of $500 per rotorcraft. At an estimated production of seven rotorcraft per year, the incremental recurring costs would total $3,500 per year for ten years, or $35,000 total (nondiscounted 1995 dollars), under one type certification. Another manufacturer estimates additional wiring costs of approximately $350 per rotorcraft and no additional nonrecurring costs. At an estimated production of 20 rotorcraft per year, the incremental recurring costs would total $7,000 per year for ten years, or $70,000 total (nondiscounted 1995 dollars), under one type certification.

There have been several accidents (and more numerous Service Difficulty Reports) related directly or indirectly to shorted or burned-through electrical wiring, i.e., the insulation offered insufficient protection. Examination of National Transportation Safety Board accident and incident data for the period 1983 through 1995 indicates one accident

(in June, 1994) primarily caused by an electrical short in the electric wiring which burned a hole in the main fuel line. The post-impact fire destroyed the helicopter (part 27). There is a strong possibility that the proposed burn test requirements could have prevented this accident. Benefits in terms of averted equipment damage and just one or two minor injuries from an accident involving a part 27 rotorcraft would easily exceed the incremental costs (maximum $70,000 per type certification) of this proposal. Codification of this requirement would ensure that all future designs include it, increasing the minimum level of safety.

[The following revisions involve minor clarifications or administrative changes]

2. Rotor drive system ... (Section 29.923)

Proposed § 29.923(a) would be amended by adding the text, "and (p)," after paragraphs (b) through (n). This would be an administrative change and would resolve a difference between the FAR and JAR regarding the OEI final rule.

3. Electrical systems and equipment - General (Section 29.1351)

The proposal would remove § 29.1351(d)(3) which refers to the burn test requirements in § 25.1359(d) that was removed by Amendment 25-72 (55 FR 29756; July 20, 1990), and add them to new § 29.1359(c). The change is administrative and would not alter the current requirements.

4. Electrical system fire and smoke protection (Section 29.1359(c))

As discussed in the previous paragraph, new § 29.1359(c) would contain the burn test requirements, which would be an administrative change not altering the current requirements.

C. Costs/Benefits summary

In summary, the proposed revisions would impose no incremental costs on manufacturers or operators of part 29 rotorcraft. For smaller manufacturers producing only part 27 rotorcraft, there would be incremental costs totaling between $40,000 and $70,000 (nondiscounted 1995 dollars) per type certification associated with one provision and $2,000 for another provision. Benefits of averted accidents and reduced certification costs associated with harmonized FAR/JAR requirements would easily exceed these costs. In addition, codification of those requirements complied with indirectly (i.e., as a result of complying with other provisions) or "voluntarily" (by virtue of competitive pressures) would ensure continuation of enhanced safety levels in future rotorcraft designs.

Based on the findings of no significant incremental costs coupled with the benefits of harmonization savings and higher levels of safety, the FAA has determined that the proposed rule would be cost-beneficial.

IV. Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed or final rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size, "significant economic impact" in terms of annualized costs, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to a proposed or final rule.

The proposed rule would affect manufacturers of future type-certificated normal and transport category rotorcraft. For aircraft manufacturers, Order 2100.14A defines a small entity as one with 75 or fewer employees and a significant economic impact as annualized costs of at least $19,500 (1995 dollars). The FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers since (1) no part 29 and only two part 27 rotorcraft manufacturers have 75 or fewer employees, and (2) the annualized incremental costs of the rule are less than $19,500.

V. International Trade Impact Assessment

The proposed rule would not constitute a barrier to international trade, including the export of U.S. rotorcraft to foreign countries and the import of foreign rotorcraft into the United States. Instead, the changes would harmonize certification procedures of the FAA with those of the JAA and thereby lessen restraints on trade.

For Insertion Into Preamble of Proposed Rule:

"Harmonization of Miscellaneous Rotorcraft Regulations"

Economic Evaluation, Regulatory Flexibility Determination, and International Trade Impact Assessment

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 impact of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this proposed rule: 1) would generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; 2) is not "significant" as defined in DOT's Regulatory Policies and Procedures; 3) would not have a significant impact on a substantial number of small entities; and 4) would lessen restraints on international trade. These analyses, available in the docket, are summarized below.

Economic Evaluation

Overall, the proposed changes would result in net cost savings by promoting harmonization between FAA and JAA regulations and eliminating unnecessary duplication of certification requirements. The costs and

benefits of the changes regarding the fitting factor for berths and litters, removal of the phrase "unless a rollover is shown to be extremely remote" (in §§ 27.975(b) and 29.975(a)(7)), autopilot operating mode, and burn test for electrical wire in normal category rotorcraft, are summarized below. All other revisions involve clarifications or administrative changes.

The fitting factor requirement would not impose incremental costs on most rotorcraft manufacturers. One small manufacturer of part 27 rotorcraft indicated additional nonrecurring testing and analysis costs of $2,000 to substantiate the 1.33 factor in an initial new type certification; most likely, this additional cost would not be incurred in subsequent type certifications. Although there have been no identifiable accidents involving litters attributable to insufficient attachment strength, even one minor injury would far exceed the relatively low costs. Codification of the 1.33 fitting factor, which is inherent in most current designs, would ensure that all future designs include this standard, increasing the minimum level of safety.

There would be no incremental costs or benefits associated with removal of the phrase "unless a rollover is shown to be extremely remote" in §§ 27.975(b) and 29.975(a)(7) since rotorcraft currently meet the minimum fuel spillage requirements of these sections.

The autopilot display requirement would not impose any incremental costs on rotorcraft manufacturers since new autopilot systems employed in rotorcraft are identical to those in airplanes and the mode indicator is

now integral to such systems. Codification of this requirement would ensure that all future rotorcraft designs comply with this standard.

Most U.S. and European manufacturers currently use electrical wire that meets the burn test requirements for transport category rotorcraft since they produce both parts 27 and 29 rotorcraft. However, the few manufacturers that produce normal category rotorcraft only would likely experience additional costs. One manufacturer estimates additional nonrecurring testing/design costs at $5,000 per type certification and additional wiring costs of $500 per rotorcraft. At an estimated production of seven rotorcraft per year, the incremental recurring costs would total $3,500 per year for ten years, or $35,000 total (nondiscounted 1995 dollars), under one type certification. Another manufacturer estimates additional wiring costs of approximately $350 per rotorcraft and no additional nonrecurring costs. At an estimated production of 20 rotorcraft per year, the incremental recurring costs would total $7,000 per year for ten years, or $70,000 total (nondiscounted 1995 dollars), under one type certification.

There have been several accidents (and more numerous Service Difficulty Reports) related directly or indirectly to shorted or burned-through electrical wiring, i.e., the insulation offered insufficient protection. Examination of National Transportation Safety Board accident and incident data for the period 1983 through 1995 indicates one accident (in June, 1994) primarily caused by an electrical short in the electric wiring which burned a hole in the main fuel line. The post-impact fire destroyed the helicopter (part 27). There is a strong possibility that

the proposed burn test requirements could have prevented this accident. Benefits in terms of averted equipment damage and just one or two minor injuries from an accident involving a part 27 rotorcraft would easily exceed the incremental costs of this proposal. Codification of this requirement would ensure that all future designs include it, increasing the minimum level of safety.

Based on the findings of no significant incremental costs coupled with the benefits of harmonization savings and higher levels of safety, the FAA has determined that the proposed rule would be cost-beneficial.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed or final rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size, "significant economic impact" in terms of annualized costs, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to a proposed or final rule.

The proposed rule would affect manufacturers of future type-certificated normal and transport category rotorcraft. For aircraft manufacturers, Order 2100.14A defines a small entity as one with 75 or fewer employees and a significant economic impact as annualized costs of at least $19,500 (1995 dollars). The FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers since (1) no part 29 and only two part 27 rotorcraft manufacturers have 75 or fewer employees, and (2) the annualized incremental costs of the rule are less than $19,500.

International Trade Impact Assessment

The proposed rule would not constitute a barrier to international trade, including the export of U.S. rotorcraft to foreign countries and the import of foreign rotorcraft into the United States. Instead, the changes would harmonize certification procedures of the FAA with those of the JAA and thereby lessen restraints on trade.

FAA Action

federal register

Monday
June 9, 1997

Part II

Department of Transportation

Federal Aviation Administration

14 CFR Parts 27 and 29
Harmonization of Miscellaneous Rotorcraft Regulations; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No. 28929; Notice No. 97-8]

RIN 2120-AG23

Harmonization of Miscellaneous Rotorcraft Regulations

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes changes to the type certification requirements for normal and transport category rotorcraft. The change would amend the airworthiness standards to require a cockpit indication of autopilot operating mode to the pilots for certain autopilot configurations, to clarify the burn test requirements for electrical wiring for transport category rotorcraft, and to provide a new requirement for an electrical wire burn test for normal category rotorcraft. The proposed rule would also add a 1.33 fitting factor structural strength requirement to the attachment of litters and berths. The proposed changes to 14 CFR parts 27 and 29 (parts 27 and 29) are harmonized with the European Joint Aviation Requirements (JAR) 27 and 29.

DATES: Comments must be received on or before September 8, 1997.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Office of the Chief Counsel, Attention: Rules Docket (AGC-200), Docket No. 28929; Room 915G, 800 Independence Avenue SW, Washington, DC 20591. Comments submitted must be marked Docket No. 28929. Comments may also be sent electronically to the following internet address: 9-NPRM-CMTS@faa.dot.gov. Comments may be examined in Room 915G weekdays between 8:30 a.m. and 5:00 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. Carroll Wright, Regulations Group, ASW-111, Rotorcraft Directorate, Aircraft Certification Service, FAA, Fort Worth, Texas 76193-0111, telephone (817) 222-5120.

SUPPLEMENTARY INFORMATION:

Comments Invited

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. Comments relating to the environmental, energy, federalism, or economic impact that might result from adopting the proposals in this notice are also invited. Substantive comments should be accompanied by cost estimates. Comments must identify the regulatory docket or notice number and be submitted in triplicate to the Rules Docket at the address specified under the caption **ADDRESSES**.

All comments received, as well as a report summarizing each substantive public contact with FAA personnel on this rulemaking, will be filed in the docket. The docket is available for public inspection before and after the comment closing date.

All comments received on or before the closing date will be considered before taking action on this proposal. Late-filed comments will be considered to the extent practicable. The proposals contained in this notice may be changed in light of the comments received.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a preaddressed, stamped postcard on which the following statement is made: "Comments to Docket No. 28929." The postcard will be date stamped and mailed to the commenter.

Availability of NPRM's

Using a modem and suitable communications software, an electronic copy of this document may be downloaded from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: 703-321-3339), the **Federal Register's** electronic bulletin board service (telephone: 202-512-1661), or the FAA's Aviation Rulemaking Advisory Committee Bulletin Board service (telephone: 202-267-5948).

Internet users may reach the FAA's web page at http://www.faa.gov or the **Federal Register's** webpage at http://www.access.gpo.gov/su_docs for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Office of Rulemaking, ARM-1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267-9680. Communications must identify the notice number of this NPRM.

Persons interested in being placed on a mailing list for future NPRM's should request from the above office a copy of Advisory Circular No. 11-2A, NPRM Distribution System, that describes the application procedure.

Background

The FAA has established an Aviation Rulemaking Advisory Committee (ARAC). By a notice in the **Federal Register** (60 FR 4221, January 20, 1995), the FAA announced the establishment of the Harmonization of Miscellaneous Rotorcraft Regulations Working Group. The Working Group was tasked to recommend to ARAC new or revised requirements for pilot indication of autopilot operating mode; burn test for electrical wire; seats, berths, and litters; and other rotorcraft issues. Specifically, the working group received the following tasks:

1. Review §§ 1329 and 29.1329 and supporting policy and guidance material for the purpose of determining the course of action to be taken for rulemaking and/or policy relative to the issue of requiring pilot indication of autopilot operating mode similar to parts 23 and 25 requirements.

2. Review parts 27 and 29 to determine if clarification is needed for the burn test requirements for transports category and whether a new requirement for burn test for electrical wire for normal category rotorcraft is needed. Consider whether § 29.1351(d)(3) should be deleted and if new §§ 27.1365(c) and 29.1359(c) should be created to specify electrical wire insulation burn test requirements.

3. Review §§ 27.785(f)(2) and 29.785(f)(2) to determine if these sections should be revised to specify whether the 1.33 fitting factor for seats should also apply to berths and litters.

4. Review and make recommendations regarding the disharmonizations introduced by the new Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings (OIE) (59 FR 47764; September 16, 1994) and the Crash Resistant Fuel Systems (CRS) in Normal and Transport Category Rotorcraft (59 FR 50380; October 3, 1994) final rules.

The working group included representatives from four major rotorcraft manufacturers (normal and transport) and representatives from Aerospace Industries Association of American, Inc. (AIA), Association Europeene des Constructeurs de Material Aerospatial (AECMA), Helicopter Association International (HAI), the European Joint Aviation Authorities (JAA), and the FAA Rotorcraft Directorate. This broad participation is consistent with FAA policy to involve all known interested parties as early as practicable in the rulemaking process.

The working group presented its findings to the ARAC, which recommended to the FAA the certain miscellaneous changes be made to the airworthiness standards for both parts 27 and 29.

The FAA has evaluated and accepted the ARAB recommendations and proposes the change contained in this notice.

General Discussion of the Proposals

The following changes are proposed to the airworthiness standard for normal and transport category rotorcraft.

Sections 27.625 and 29.625 Fitting Factors

A new paragraph (d) would be added to §§ 27.625 and 29.625 to require that the 1.33 fitting factor, specified in §§ 27.785 and 29.785 for the attachment of seats, also applies to the attachment for litters and berths. The 1.33 fitting factor is necessary to ensure that fittings subject to wear and tear under normal use and subject to frequent removal and replacement in the aircraft will retain adequate strength to perform their intended function under crash landing conditions. The need for this factor for seat attachments and associated harnesses has been substantiated by service experience and is recognized in 14 CFR parts 23, 25, 27, and 29 and in the equivalent JAR. Also, the need for the 1.33 factor for the attachment of litters, berths, and associated harnesses is included in parts 23 and 25 and JAR 23 and 25 but is not currently included in parts 27 and 29 or JAR 27 and 29. This proposed change would provide the same level of safety for passengers in litters and berths as in seats and would harmonize the fitting factor requirement of parts 23, 25, 27, 29 and the JAR.

Sections 27.785 and 29.785 Seats, Berths, Litters, Safety Belts, and Harnesses

Since the requirements for litters and berths are specified in §§ 27.785(k) and 29.785(k), a new sentence to paragraph (k)(2) is proposed to clarify the requirement for applying the 1.33 fitting factor. This proposed revision would clarify that the 1.33 fitting factor for the attachment of seats specified in proposed §§ 27.625(d) and 29.625(d) also applies to the attachment of litters and berths.

Sections 27.975 and 29.975 Fuel Tank Vents

This proposed revision would remove the phrase "unless a rollover is shown to be extremely remote" from §§ 27.975(b) and 29.975(a)(7). The JAA states that the phrase "unless a rollover is shown to be extremely remote" results in weakening the desired requirement, so that a postcrash fire could occur on an aircraft not equipped with rollover protection. The FAA agrees that the intent of this rule is to prevent postcrash fires due to rollover and concludes that the phrase does not contribute to the desired result. Also, this proposed revision would resolve a difference between parts 27 and 29 and JAR 27 and 29 introduced by the Crash Resistant Fuel Systems final rule noted earlier.

Sections 27.1329 and 29.1329 Automatic Pilot System

A new paragraph (f) would be added to §§ 27.1329 and 29.1329 to require display of the autopilot mode to the pilots. Current parts 23 and 25 require that "If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the flight crew the current mode of operation. Selector switch position is not acceptable as a means indication." Airplane accidents occurred prior to adoption of the requirement of the display of the autopilot mode in parts 23 and 25 due to the pilot not being aware of the current autopilot mode. This type of accident could occur in rotorcraft. Safety will be enhanced by requiring that the autopilot mode be displayed to the pilots of rotorcraft. This would harmonize parts 27 and 29 with the corresponding JAR.

Section 27.1365 Electric Cables

A new paragraph (c) to § 27.1365 is proposed that would add a burn test to require self-extinguishing insulation on electrical wire and cable installed in normal category rotorcraft. Most European and U.S. rotorcraft manufacturers currently use electrical wire that meets the proposed burn test requirements. This proposal would require that compliant wire be used.

Section 29.923 Rotor Drive System and Control Mechanism Tests

The proposed revision to § 29.923(a) would add the words, "and (p)," after the words "paragraphs (b) through (n)." The "and p" was inadvertently omitted by the OEI final rule, Amendment 29–35. This change is proposed to correct the oversight and to harmonize part 29 with the JAR requirement.

Section 29.1351 General

The proposal would delete the burn test requirements of § 29.1351(d)(1)(iii) and the reference to § 25.1359(d) contained in it. Section 25.1359(d) was removed from part 25 by Amendment 25–72 (55 FR 29756; July 20, 1990). The proposal would move the electrical wire burn test requirements to a new § 29.1359(c) and cite the correct reference, part 25, Appendix F, Part I(a)(3). The proposed change is administrative and will not alter the current requirements.

Section 29.1359 Electrical System Fire and Smoke Protection

As discussed in the previous paragraph, new § 29.1359(c) would contain the electrical wire burn test requirements. The proposal would add paragraph (c) to this section to place the requirement under a more appropriate heading. The proposed change is administrative and will not alter the current requirements.

Paperwork Reduction Act

There are no requirements for information collection associated with this proposed rule that would require approval under the Paperwork Reduction Act of 1980, 44 U.S.C. § 3501 *et seq.*

Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 impact of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this proposed rule: (1) would generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; (2) is not "significant" as defined in DOT's Regulatory Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and (4) would lessen restraints on international trade. These analyses, available in the docket, are summarized below.

Economic Evaluation

Overall, the proposed changes would result in net cost savings by promoting harmonization between the U.S. regulations and the JAR and by eliminating unnecessary duplication of certification requirements. The costs and benefits of the changes regarding the fitting factor for the attachment of berths and litters, removal of the phrase "unless a rollover is shown to be extremely remote" (in §§ 27.975(b) and 29.975(a)(7)), autopilot operating mode, and burn test for electrical wire in normal category rotorcraft, are

summarized below. All other revisions involve clarification or administrative changes.

The fitting factor requirement would not impose incremental costs on most rotorcraft manufacturers. One small manufacturer of part 27 rotorcraft indicated additional nonrecurring testing and analysis costs of $2,000 to substantiate the 1.33 factor in an initial new type certification; most likely, this additional cost would not be incurred in subsequent type certifications. Although there have been no identifiable accidents involving litters attributable to insufficient attachment strength, even one minor injury would far exceed the relatively low costs. Codification of the 1.33 fitting factor, which is inherent in most current designs, would ensure that all future designs include this standard, increasing the minimum level of safety.

There would be no incremental costs or benefits associated with removal of the phrase "unless a rollover is shown to be extremely remote" in §§ 27.975(b) and 29.975(a)(7) since rotocraft currently meet the minimum fuel spillage requirements under roll-over conditions.

The autopilot display requirement would impose no or insignificant incremental costs on rotocraft manufacturers since new autopilot systems employed in rotocraft are similar to those in airplanes and the mode indicator is typically integral to such systems. Codification of this requirement would ensure that all future rotocraft designs comply with this standard.

Most U.S. and European manufacturers currently use electrical wire that meets the burn test requirements for transport category rotocraft since they produce both part 27 and part 29 rotocraft. However, the few manufacturers that product normal category rotocraft only would likely experience additional costs. One manufacturer estimates additional nonrecurring testing/design costs at $5,000 per type certification and additional wiring costs of $500 per rotocraft. At an estimated production of seven rotocraft per year, the incremental recurring costs would total $3,500 per year for 10 years, or $35,000 total (nondiscounted 1995 dollars), under one type certification. Another manufacturer estimates additional wiring costs of approximately $350 per rotocraft and no additional nonrecurring costs. At an estimated production of 20 rotocraft per year, the incremental recurring costs would total $7,000 per year for 10 years, or $70,000 total (nondiscounted 1995 dollars), under one type certification.

There have been several accidents (and more numerous Service Difficulty Reports) related directly or indirectly to shorted or burned-through electrical wiring; i.e., the insulation offered insufficient protection. Examination of National Transportation Safety Board accident and incident data for the period 1983 through 1995 indicates one accident (in June 1994) caused primarily by a short in the electric wiring that burned a hole in the main fuel line. The post-impact fire destroyed the normal category helicopter. There is a strong possibility that the proposed burn test requirements could have prevented this accident. Benefits in terms of averted equipment damage and just one or two minor injuries from an accident involving a part 27 rotocraft would easily exceed the incremental costs of this proposal. Codification of this requirement would ensure that all future designs comply, increasing the minimum level of safety.

Based on the findings of no significant incremental costs coupled with the benefits of harmonization savings and higher levels of safety, the FAA has determined that the proposed rule would be cost-beneficial.

Initial Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The RFA requires a Regulatory Flexibility Analysis if a proposed or final rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size, "significant economic impact" in terms of annualized costs, and "substantial number" as a number that is not less than 11 and which is more than one-third of the small entities subject to a proposed or final rule.

The proposed rule would affect manufacturers of future type-certificated normal and transport category rotocraft. For aircraft manufacturers, Order 2100.14A defines a small entity as one with 75 or fewer employees and a significant economic impact as annualized costs of at least $19,500 (1995 dollars). The FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers since (1) no part 29 and only two part 27 rotorcraft manufacturers have 75 or fewer employees, and (2) the annualized incremental costs of the rule are less than $19,500.

International Trade Impact Analysis

The proposed rule would not constitute a barrier to international trade, including the export of American rotorcraft to foreign countries and the import of foreign rotorcraft into the United States. Instead, the proposed changes on rotorcraft certification procedures, harmonized with those of the JAA, would lower dual certification costs, thereby enhancing free trade. Each applicant for a new type certificate for normal and transport category rotorcraft, whether the applicant be U.S. or foreign, will be required to show compliance with this rule.

Conclusion

For the reasons discussed above, including the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the Office of Information and Regulatory Affairs (OIRA), in conjunction with the FAA, has determined that this proposed regulation is not a significant regulatory action under Executive Order 12866 and, therefore, is not subject to centralized regulatory review by the OIRA. In addition, the FAA certifies that his regulation will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This proposal is considered to be nonsignificant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). An initial regulatory evaluation of the proposal, including a Regulatory Flexibility Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under **FOR FURTHER INFORMATION CONTACT.**

List of Subjects

14 CFR Part 27

Air transportation, Aircraft, Aviation safety, Rotorcraft, Safety.

14 CFR Part 29

Air transportation, Aircraft, Aviation safety, Rotorcraft, Safety.

The Proposed Amendments

In consideration of the foregoing, the FAA proposes to amend 14 CFR parts 27 and 29 as follows:

PART 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

1. The authority citation for part 27 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

2. In § 27.625, a new paragraph (d) is added to read as follows:

§ 27.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in § 27.561(b)(3) multiplied by a fitting factor of 1.33.

3. Section 27.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 27.785 Seats, berths, litters, safety belts, and harnesses.

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 27.625(d) shall be applied.

§ 27.975 [Amended]

4. In § 27.975, paragraph (b) is amended by removing the words ", unless a rollover is shown to be extremely remote".

5. In § 27.1329, a new paragraph (f) is added to read as follows:

§ 27.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

6. In § 27.1365, a new paragraph (c) is added to read as follows:

§ 27.1365 Electric cables.

* * * * *

(c) Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with Appendix F, Part I(a)(3) of part 25 of this chapter.

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

7. The authority citation for part 29, continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

8. In § 29.625, a new paragraph (d) is added to read as follows:

§ 29.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in § 29.561(b)(3) multiplied by a fitting factor of 1.33.

9. Section 29.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 29.785 Seats, berths, litters, safety belts, and harnesses.

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 29.625(d) shall be applied.

§ 29.923 [Amended]

10. In § 29.923, the first sentence of the introductory text of paragraph (a) is revised by adding the phrase "and (p)" immediately following the reference to paragraph (n).

§ 29.975 [Amended]

11. In § 29.975, paragraph (a)(7) is amended by removing the words ", unless a rollover is shown to be extremely remote".

12. In § 29.1329, a new paragraph (f) is added to read as follows:

§ 29.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

13. In § 29.1351, paragraph (d)(1)(iii) is removed.

§ 29.1351 General.

14. In § 29.1359, a new paragraph (c) is added to read as follows:

§ 29.1359 Electrical system fire and smoke protection.

* * * * *

(c) Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with Appendix F, Part I(a)(3) of part 25 of this chapter.

Issued in Washington, DC, on May 30, 1997.

Thomas E. McSweeney,

Director, Aircraft Certification Service, AIR–1.

[FR Doc. 97–14885 Filed 6–6–97; 8:45 am]

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federal register

Wednesday
August 12, 1998

Part IV

Department of Transportation

Federal Aviation Administration

14 CFR Parts 27 and 29
Harmonization of Miscellaneous Rotorcraft Regulations; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No. 28929; Amendment Nos. 27–35 & 29–42]

RIN 2120–AG23

Harmonization of Miscellaneous Rotorcraft Regulations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is amending the airworthiness standards for normal and transport category rotorcraft. The changes amend the airworthiness standards to require a cockpit indication of autopilot operating mode to the pilots for certain autopilot configurations, to clarify the burn test requirements for electrical wiring for transport category rotorcraft, and to provide a new requirement for an electrical wire burn test for normal category rotorcraft. The rule also adds a 1.33 fitting factor structural strength requirement to the attachment of litters and berths.

EFFECTIVE DATE: September 11, 1998.

FOR FURTHER INFORMATION CONTACT: Carroll Wright, Regulations Group, Rotorcraft Directorate, Aircraft Certification Service, FAA, Worth, Texas 76193–0111, telephone number (817) 222–5120, fax (817) 222–5961.

SUPPLEMENTARY INFORMATION:

Availability of Final Rules

Using a moderm and suitable communications software, an electronic copy of this document may be downloaded from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: 703–321–3339), the **Federal Register's** electronic bulletin board service (telephone: 202–512–1661), or the FAA's Aviation Rulemaking Advisory Committee (ARAC) Bulletin Board service (telephone: 800–322–2722 or 202–267–5948).

Internet users may reach the FAA's web page at http://www.faa.gov/avr/arm/nprm/nprm/htm or the **Federal Register** webpage at http://www.access.gpo.gov/su_docs/aces/aces 140.html for access to recently published rulemaking documents.

Any person may obtain a coy of this final rule by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling 202–267–9680. Communications must identify the amendment number of docket number of this final rule.

Persons interested in being placed on the mailing list for future Notices of Proposed Rulemaking (NRPMs) and Final Rules should request from the above office a copy of Advisory Circular No. 11–2A, NPRM Distribution System, that describes the application procedure.

Small Entity Inquiries

The Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA) requires the FAA to report inquiries from small entities concerning information on, and advice about, compliance with statutes and regulations within the FAA's jurisdiction, including interpretation and application of the law to specific sets of facts supplied by a small entity.

If you are a small entity and have a question, contact your local FAA official. If you do not know how to contact your local FAA official, you may contact Charlene Brown, Program Analyst Staff, Office of Rulemaking, ARM–27, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, 1–888–551–1594. Internet users can find additional information on SBREFA in the "Quick Jump" section of the FAA's web page at http://www.faa.gov and may send electronic inquiries to the following internet address: 9–AWA–SBREFA@faa.dot.gov.

Background

These amendments are based on NPRM No. 97–8 published in the **Federal Register** on June 9, 1997 (62 FR 31475). That notice proposed to amend the airworthiness standards for both normal and transport category rotorcraft based on recommendations from the ARAC. By announcement in the **Federal Register** (60 FR 4221, January 20, 1995), the "Harmonization of Miscellaneous Rotorcraft Regulations Working Group" was chartered by the ARAC. The working group included representatives from the major rotorcraft manufacturers (normal and transport) and representatives from Aerospace Industries Association of America, Inc. (AIA), Association Europeene des Constructeurs de Material Aerospatial (AECMA), Helicopter Association International (HAI), Joint Aviation Authorities (JAA), and the Federal Aviation Administration (FAA) Rotorcraft Directorate. This broad participation is consistent with FAA policy to have all known interested parties involved as early as practicable in the rulemaking process.

On January 9, 1996, the Miscellaneous Harmonization Working Group submitted recommendations to the ARAC concerning the need (1) to provide a cockpit indication of autopilot operating mode to the pilots for certain autopilot configurations, (2) to clarify the burn test requirements for electrical wiring for transport category rotorcraft, (3) to provide a new requirement for an electrical wire burn test for normal category rotorcraft, and (4) to add a 1.33 fitting factor structural strength requirement to the attachment of litters and berths. The working group also submitted recommendations to ARAC concerning the disharmonizations introduced by the new Rotorcraft 30 Second/2 Minute One-Engine Inoperative Power Ratings (OEI) (59 FR 47764; September 16, 1994) and the Crash Resistant Fuel Systems (CRFS) in Normal and Transport Category Rotorcraft (59 FR 50380; October 3, 1994) final rules.

The ARAC reviewed the working group recommendations and subsequently recommended that the FAA revise the airworthiness standards for normal and transport category rotorcraft to incorporate the miscellaneous changes. The changes to 14 CFR parts 27 and 29 (parts 27 and 29) are harmonized with the European Joint Aviation Requirements (JAR) 27 and 29.

The FAA evaluated the ARAC recommendations and made its proposals in NPRM 97–8. The FAA received two comments to the proposed miscellaneous changes.

Discussion of Comments

Interested persons have been afforded an opportunity to participate in the making of these amendments. Due consideration was given to the comments received from the two commenters. One commenter representing HAI was fully supportive of the proposed changes.

Another commenter recommended changes to the proposed part 27 electrical wire burn test requirements. This commenter does not believe self-extinguishing wire is required for low amperage installation and requested the following wording be added to § 27.1365: "* * * To require self-extinguishing installation of electrical wire and cable larger than 18 gauge and carrying current draws of over 5 amps per wire. Multi-strand cable with over 4 strands in a closed cable sheave are exempt from this requirement * * *" The FAA does not agree to exempt multi-strand wires or 18 gauge wires or smaller. Any wire, regardless of size or number of strands, may constitute a fire hazard. Small gauge wires may be

routed in wire bundles with larger gauge wires. Any fire in the wire bundle would be fueled by nonself-extinguishing wire and thereby defeat the purpose of the rule.

After considering all of the comments, the FAA has determined that air safety and the public interest require adoption of the amendments are proposed.

Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. § 3507(d)), there are no requirements for information collection associated with this final use.

International Compatibility

The FAA has determined that a review of the Convention on International Civil Aviation Standards and Recommended Practices is not warranted because there is not a comparable rule under International Civil Aviation Organization (ICAO) standards.

Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall 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 (RFA) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. And fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation). In conducting these analyses, the FAA has determined that this rule: (1) will generate benefits that justify its costs and is not a "significant regulatory action" as defined in the Executive Order; (2) is not "significant" as defined as DOT's Regulatory Policies and Procedures; (3) will not have a significant impact on a substantial number of small entities; (4) will lessen restraints on international trade; and (5) does not contain a significant intergovernmental or private sector mandate. These analyses, available in the docket, are summarized below.

Economic Evaluation

The revisions will impose no incremental costs on the larger manufacturers that produce both part 27 and 29 rotorcraft. For smaller manufacturers producing only part 27 rotorcraft, there will be incremental costs totalling approximately $60,000 (nondiscounted 1997 dollars) per type certification. For some manufacturers of specialized equipment in part 27 rotorcraft, incremental cost could equal an additional $500 per rotorcraft. Overall, the changes will increase safety and promote harmonization between FAA and JAA regulations. Harmonization will eliminate unnecessary duplication of certification requirements (e.g., testing/design), thus reducing manufacturers' costs.

The costs and benefits of the changes regarding the fitting factor for berths and litters, removal of the phrase "unless a rollover is shown to be extremely remote" (in §§ 27.975(b) and 29.975(a)(7)), autopilot operating mode, and burn test for electrical wire in normal category rotorcraft are summarized below. All other revisions involve minor clarifications or administrative changes.

The fitting factor requirement will not impose incremental costs on most rotorcraft manufacturers. One small manufacturer of part 27 rotorcraft indicated additional nonrecurring testing and analysis costs of $2,100 to substantiate the 1.33 factor in an initial new type certification; most likely, this additional cost will not be incurred in subsequent type certification. Although there have been no identifiable accidents involving litters attributable to insufficient attachment strength, even one minor injury will far exceed the relatively low costs. Codification of the 1.33 fitting factor, which is inherent in most current designs, will ensure that all future designs include this standard, increasing the minimum level of safety.

There will be no incremental costs or benefits associated with removal of the phrase "unless a rollover is shown to be extremely remote" in §§ 27.975(b) and 29.975(a)(7) since rotorcraft currently meet the minimum fuel spillage requirements of these sections.

The autopilot display requirement will not impose any incremental costs on rotorcraft manufacturers since new autopilot systems employed in rotorcraft are identical to those in airplanes and the mode indicator in now integral to such system. Codification of this requirement will ensure that all future rotorcraft designs comply with this standard.

Most U.S. and European manufacturers currently use electrical wire that meets the burn test requirements for transport category rotorcraft since they produce both parts 27 and 29 rotocraft. However, the few manufacturers that produce normal category rotorcraft only will likely experience additional costs. One manufacturer estimates additional nonrecurring testing/design costs at $5,300 per type certification and additional wiring costs of $530 per rotorcraft. At an estimated production of seven rotorcraft per year, the incremental recurring costs will total $3,710 per year for ten years, or $37,100 total (nondiscounted 1997 dollars), under one type certification. Another manufacturer estimates additional wiring costs of $370 per rotorcraft and no additional nonrecurring costs. At an estimated production of 20 rotorcraft per year, the incremental recurring costs will total $7,400 per year ten years, or $74,000 total (nondiscounted 1997 dollars), under one type certification. Averaging the incremental costs for these two manufacturers results in an estimate of approximately $58,200 per type certification (135 units produced at approximately $430 per unit).

Part 27 rotorcraft which will be used in specialized operations may require somewhat more expensive wiring to meet the new burn test requirements. The second commenter to the notice alluded to earlier (a manufacturer of fire-fighting systems) indicates that meeting the new standards will result in a 5 percent increase in the selling price of its system, or $900 per unit. A manufacturer of agricultural spraying systems, however, indicates increased per system costs of only a fraction of one percent, equating to $100 per unit. Since both of these systems represent the type of add-on electrical system potentially affected by the wiring provision, using the average of the two estimates, or $500, is appropriate. Assuming 20 of the new production rotorcraft (about 15%) will be equipped with the add-on systems, the additional incremental costs total $10,000.

Examination of National Transportation Safety Board accident data for the period 1983 through 1995 indicates several rotorcraft accidents and incidents in which the electrical system was cited as a cause or contribute factor. One accident (in June 1994) was primarily caused by an electrical short in the wiring which burned a hole in the main fuel line, causing a post-impact fire that destroyed the part 27 helicopter. The FAA believes that the revised burn test requirements could have prevented this accident. If

the rule prevents one such accident during the operating lives (25-years) of rotorcraft produced under one part 27 type certification, the rule will be cost-beneficial: Replacement costs of a substantially-damaged rotorcraft equals $125,000 (this benefit alone will exceed the total costs of approximately $70,000); adding cumulative damage from two or three minor incidents (say $20,000 to $30,000) and potential harmonization cost savings ($50,000, based on estimates from previous harmonized rotorcraft rules) increases the benefits to approximately $200,000, which is almost three times the costs. If one serious injury (valued at over $500,000) is prevented, the benefits of the rule would be several times the estimated costs.

In addition, codification of those requirements complied with indirectly (i.e., as a result of complying with other provisions) or "voluntarily" (by virtue of competitive pressures) will ensure continuation of enhanced safety levels in future rotorcraft designs.

Based on the findings of no significant incremental costs coupled with the benefits of harmonization savings and higher levels of safety, the FAA has determined that the rule will be cost-beneficial.

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 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.

For manufacturers, a small entity is one with 1,500 or fewer employees. Only five rotorcraft have 1,500 or fewer employees and therefore qualify as small entities. However, three of these are not currently producing new type-certificated rotocraft, and another does not compete with the larger manufacturers. Consequently, only one producer could potentially be impacted by this rule. However the annualized increased certification costs for a rotorcraft manufacturer (based on the average incremental costs of the wiring requirements as reported by the two manufacturers, added to the costs to comply with the fitting factor requirements) equals approximately $4,400 per type certification, which is not considered significant within the meaning of the RFA. Consequently, the FAA certifies that the rule will not have a significant economic impact on a substantial number of small rotorcraft manufacturers.

The two manufacturers of specialized component systems described earlier are also small entities; notwithstanding, the average $500 incremental cost can easily be passed on to purchasers given the inelastic demand for such specialized rotorcraft systems. There is not a substantial number of other rotorcraft systems. There is not a substantial number of other rotorcraft parts manufacturers that will be impacted by this rule. Consequently, the FAA certifies that the rule will not have a significant economic impact on a substantial number of small rotorcraft parts manufacturers.

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 American companies doing business in foreign markets, and foreign companies doing business in the United States.

This 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 will be a positive step toward removing impediments to international trade.

Federalism Implications

The regulations herein will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this rule will not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Unfunded Mandates Assessment

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 government, 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 determined that this rule does not contain a significant intergovernmental or private sector mandate as defined by the Act.

List of Subjects in 14 CFR Parts 27 and 29

Air transportation, Aircraft, Aviation safety, Rotorcraft, Safety.

The Amendments

Accordingly, the FAA amends 14 CFR parts 27 and 29 as follows:

PART 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

1. The authority citation for part 27 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

2. In § 27.625, a new paragraph (d) is added to read as follows:

§ 27.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt, and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in § 27.561(b)(3) multiplied by a fitting factor of 1.33.

3. Section 27.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 27.785 Seats, berths, litters, safety belts, and harnesses.

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 27.625(d) shall be applied.

§ 27.975 [Amended]

4. In § 27.975, paragraph (b) is amended by removing the words", unless a rollover is shown to be extremely remote".

5. In § 27.1329, a new paragraph (f) is added to read as follows:

§ 27.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

6. In § 27.1365, a new paragraph (c) is added to read as follows:

§ 27.1365 Electric cables.

* * * * *

(c) Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with Appendix F, Part I(a)(3), of part 25 of this chapter.

PART 29—AIRWORTHINESS STANDARDS:TRANSPORT CATEGORY ROTORCRAFT

7. The authority citation for part 29 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701–44702, 44704.

8. In § 29.625, a new paragraph (d) is added to read as follows:

§ 29.625 Fitting factors.

* * * * *

(d) Each seat, berth, litter, safety belt, and harness attachment to the structure must be shown by analysis, tests, or both, to be able to withstand the inertia forces prescribed in § 29.561(b)(3) multiplied by a fitting factor of 1.33.

9. Section 29.785 is amended by revising the heading and by adding a new sentence to the end of paragraph (k)(2) to read as follows:

§ 29.785 Seats, berths, litters, safety belts, and harnesses

* * * * *

(k) * * *

(2) * * * The fitting factor required by § 29.625(d) shall be applied.

§ 29.923 [Amended]

10. In § 29.923(a), the first sentence of the introductory text is amended adding the phrase "and (p)" immediately following the reference to paragraph "(n)".

§ 29.975 [Amended]

11. In § 29.975, paragraph (a)(7) is amended by removing the words ", unless a rollover is shown to be extremely remote".

12. In § 29.1329, a new paragraph (f) is added to read as follows:

§ 29.1329 Automatic pilot system.

* * * * *

(f) If the automatic pilot system can be coupled to airborne navigation equipment, means must be provided to indicate to the pilots the current mode of operation. Selector switch position is not acceptable as a means of indication.

13. In § 29.1351, paragraph (d)(1)(iii) is removed.

§ 29.1351 General.

14. In § 29.1359, a new paragraph (c) is added to read as follows:

§ 29.1359 Electrical system fire and smoke protection.

* * * * *

(c) Insulation on electrical wire and cable installed in the rotorcraft must be self-extinguishing when tested in accordance with Appendix F, Part I(a)(3), of part 25 of this chapter.

Issued in Washington, DC, on August 7, 1998.

Jane F. Garvey,

Administrator.

[FR Doc. 98–21609 Filed 8–11–98; 8:45 am]

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