Federal Aviation Administration
Aviation Rulemaking Advisory Committee

Rotorcraft Issue Area
Occupant Restraint Working Group

Task 1 – Rotorcraft Occupant Restraints

Task Assignment

FILE COPY

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Aviation Rulemaking Advisory Committee; Rotorcraft Subcommittee; Occupant Restraint Working Group

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of establishment of Occupant Restraint Working Group.

SUMMARY: Notice is given of the establishment of an Occupant Restraint Working Group by the Rotorcraft Subcommittee. This notice informs the public of the activities of the Rotorcraft Subcommittee of the Aviation Rulemaking Advisory Committee.

FOR FURTHER INFORMATION CONTACT: Mr. William J. (Joe) Sullivan, Executive Director, Rotorcraft Subcommittee, Aircraft Certifications Service (AIR-3), 800 Independence Avenue, SW., Washington, DC 20591, Telephone: (202) 267-9554; FAX: (202) 267-9562.

SUPPLEMENTARY INFORMATION: The Federal Aviation Administration (FAA) established an Aviation Rulemaking Advisory Committee (56 FR 2190, January 22, 1991) which held its first meeting on May 23, 1991 (56 FR 20492, May 3, 1991). The Rotorcraft Subcommittee was established at that meeting to provide advice and recommendations to the Director, Aircraft Certification Service, FAA, regarding the airworthiness standards for normal and transport category rotorcraft in parts 27 and 29 of the Federal Aviation Regulations. At its first meeting on September 25, 1991 (56 FR 33484, July 22, 1991), the subcommittee established the Occupant Restraint Working Group.

Specifically, the working group's task is the following:

Task: The Occupant Restraint Working Group is charged with making a recommendation to the Rotorcraft Subcommittee concerning whether new or revised standards are appropriate for rotorcraft occupant restraints, as follows:

1. Should the design load factors be increased for items of mass located above and behind, above, or behind the passenger compartment?

2. Should §§ 27.785(f)(2) and 29.785(f)(2) be clarified to specify the 1.33 fitting factor for seats also applies to berths and litters?

In completing this task, the working group should review comments received on FAA Notice 87-4 which recommended these changes.

Reports: The Working Group will develop any combination of the following as it deems appropriate:

1. A draft Notice of Proposed Rulemaking proposing new standards, supporting economic and other required analysis, with any other collateral documents the Working Group determines to be needed; or

2. A report stating the rationale for recommending against the adoption of new standards.

The working group will first develop a time line(s) for completion of this effort, and present it to the Subcommittee for approval at the next meeting. The working group Chair or an alternate will make a status report at each meeting of the Rotorcraft Subcommittee.

The Occupant Restraint Working Group will be comprised of experts from those organizations having an interest in the task assigned to it. A working group member need not necessarily be a representative of one of the organizations of the parent Rotorcraft Subcommittee or of the full Aviation Rulemaking Advisory Committee. 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 with the subcommittee chair and working group leader, and the individual advised whether or not the request can be accommodated.

The Secretary of Transportation has determined that the information and use of the Aviation Rulemaking Advisory Committee and its subcommittees are necessary in the public interest in connection with the performance of duties imposed on the FAA by law. Meetings of the full committee and any subcommittees will be open to the public except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the Occupant Restraint 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 November 27, 1991.

William J. Sullivan,

Executive Director, Rotorcraft Subcommittee, Aviation Rulemaking Advisory Committee.

[FR Doc. 91-29034 Filed 12-3-91; 8:45 am]

BILLING CODE 4910-13-M

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

JUN 21 1993

Mr. T. E. Dumont
Assistant Chair for Rotorcraft Issues
Aviation Rulemaking Advisory Committee
Helicopter Association International
Milford, CT 06460

Dear Mr. Dumont:

Thank you for your June 8 letter with which you transmitted a recommendation of the Aviation Rulemaking Advisory Committee on Rotorcraft Issues. You have requested that the notice of proposed rulemaking (NPRM) concerning Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft, be processed for publication. The Federal Aviation Administration (FAA) accepts this recommendation provided there are no legal or other reasons why we cannot adopt it.

The complete rulemaking package will be reviewed and coordinated within the FAA and the Offices of the Secretary of Transportation and Management and Budget. The FAA will publish the NPRM for public comment as soon as the coordination process is complete. We will make every effort to handle this recommendation expeditiously.

I would like to thank the Aviation Rulemaking Advisory Committee on Rotorcraft Issues, and particularly the Occupant Restraint Working Group, for its prompt action on the task the FAA imposed at the committee's initial meeting on rotorcraft issues held September 25, 1991.

Sincerely

Anthony J. Broderick
Associate Administrator for
Regulation and Certification

Any desired responses
should be directed to:
1101 Naugatuck Avenue
Milford,CT 06460
Tel: 203-878-1943
Fax: 203-878-2544

Helicopter
Association
International

1619 Duke Street, Alexandria, Virginia 22314-3406 Telephone: 703/683-4646 Telex: 89-615

June 8,1993

Mr.Anthony J. Broderick
Associate Administrator for Regulation and Certification (AVR-1)
Federal Aviation Administration
800 Independence Avenue,SW
Washington,DC 20591

Dear Mr.Broderick:

The Occupant Restraint Working Group of the Aviation Rulemaking Advisory Committee (ARAC) has completed the tasks assigned, as published in the "Federal Register" of December 4,1991. Accordingly, the ARAC submits herewith the resulting recommendations for changes to FAR Parts 27 and 29. These proposed changes were approved by the ARAC in conference on May 18,1993.

The recommendation package enclosed consists of:

- a draft Notice of Proposed Rulemaking (NPRM),
- an Executive Summary prepared by the Manager, Rotorcraft Directorate (ASW-100) with the concurrence of the Assistant General Counsel (ASW-7), and
- the "Preliminary Regulatory Evaluation, Initial Regulatory Flexibility Determination, and Trade Impact Assessment" for the above referenced draft NPRM.

The draft NPRM has also been coordinated with and supported by the Joint Airworthiness Authority through its representative to the ARAC for the consideration of this issue.

Therefore, it is requested that the draft NPRM be processed for publication.

Very truly yours,

T.E.Dumont
Assistant ARAC Chair for Rotorcraft Issues

cc: John O'Brien, Chair,ARAC
Chris A. Christie, Executive Director,ARAC
James D. Erickson, Manager, Rotorcraft Directorate
Eric Bries, Assistant ARAC Executive Director for Rotorcraft Issues
Robert E. Warren, Chair, ARAC Occupant Restraint 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:

Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of Proposed Rulemaking (NPRM)

SUMMARY: This notice proposes to improve occupant protection from certain items of mass outside the occupied compartments during emergency landings. The proposed standards would significantly increase the static design ultimate inertial load factors for restraining heavy items located above or behind the occupied areas. Certain fuel, cargo, and baggage compartments would also be subject to the increased factors for restraining items of mass. These proposals would further enhance occupant protection and complement the standards previously adopted for occupant restraint in normal and transport category rotorcraft in the event of a survivable emergency landing.

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

ADDRESSES: Comments on this notice should be mailed or delivered in triplicate to: Federal Aviation Administration (FAA), Office of the Chief Counsel, Attn: Rules Docket (AGC-10), Docket No. , 800 Independence Avenue, SW., Washington, DC 20591. Comments may be examined in Room 915G weekdays between 9 a.m. and 5 p.m., except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. James H. Major, Regulations Group (ASW-111), Rotorcraft Directorate, Aircraft Certification Service, FAA, Fort Worth, Texas 76193-0111, telephone number (817) 624-5117.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to submit written data, views, or arguments on this proposed rule. 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 should identify the regulatory docket number and should be submitted in triplicate to the Rules Docket address specified above. All communications received on or before the closing date for comments will be considered by the Administrator before taking action on this proposed rule. The proposals contained in this notice may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each substantive public contact with Federal Aviation Administration (FAA) personnel concerned with this rulemaking will be filed in the docket. 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

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Office of Public Affairs, Attn: Public Inquiry Center, APA-200, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267-3484. 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, Notice of Proposed Rulemaking Distribution System, which describes the application procedures.

Background

On June 3, 1987, the FAA issued NPRM 87-4 (52 FR 20938) to amend the rotorcraft airworthiness standards to improve occupant protection from impact in the event of a survivable emergency landing. Comments and counterproposals were received at a public meeting on April 20, 1988, in Fort Worth, Texas. Written comments and counterproposals are contained in Rules Docket No. 25287.

As part of the notice, the FAA proposed that Federal Aviation Regulations (FAR) §§ 27.561(c) and 29.561(c) provide for an increased "forward" static design ultimate inertial load factor (load factor) for external items of mass located above or behind the occupants. The increased load factors proposed by Notice 87-4 were based on information in Report No. DOT/FAA/CT-85/11, "Analysis of Rotorcraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria," June 1985. Counterproposals from the Aerospace Industries Association (AIA) and others recommended increasing the load factors for sideward and downward directions and further increasing the load factor for the forward

Task 1

Determine if design ultimate static load factors for any item of mass above and/or behind the crew and passenger compartments that could injure an occupant if it came loose in an emergency landing impact should be increased, and should a rearward factor be added. The proposed rearward factor is 1.5g.

Task 2

Determine if the berth and litter attachments and allied occupant restraint system attachments to the structure must have the inertial forces of 27.561(b) and 29.561(b) multiplied by a factor of 1.33 similar to the seat and torso restraint systems standards in §§ 27.785(f)(2) and 29.785(f)(2).

ARAC Task 1 Synopsis

The working group explored the merits of the increases in load factors and of the additional rearward load factor of 1.5g. Discussion centered on the potential increase in safety, current design practices, weight impact, and benefit versus cost of the proposed changes.

At the request of the subcommittee members, a manufacturer's technical specialist explained how AIA established the proposed increased load factors. A rotorcraft committee of AIA members reached a consensus on the proposed load factors after reviewing current design practices. This segment of industry represented by AIA proposed a set of increased load factors that would enhance occupant safety without introducing changes to current design practices. The working group accepted the explanation.

The ARAC working group discussed the safety impact and determined that safety would be enhanced by the proposed changes. The number of lives saved could not be quantified from information available to an AIA Crash Dynamics working group that was formed before issuance of NPRM 87-4. The ARAC working group agreed that the potential for increased safety resulting from the changes justified the need for preparing an FAA benefits and cost

comparison. The benefits and cost comparison supports the proposal and is included in the Supplementary Information of this notice.

The ARAC working group agreed that the proposal to add a 1.5g rearward load factor would be an appropriate, reasonable design condition for seats and would enhance safety. They also agreed that the cost impact would be minimal because the proposed 12.0g forward load factor probably would provide inherently a 1.5g rearward capability.

The ARAC working group agreed that certification costs for analysis or tests to substantiate compliance with the proposed changes would be negligible. The cost of analysis or tests is independent of the proposed load factors. Further, the working group technical specialists agreed that the increased load factors would have minimal and in some cases no weight impact on a new rotorcraft design, particularly when current state-of-the-art design practices are considered.

ARAC Task 2 Synopsis

The working group studied and discussed the use of a 1.33 attachment factor for litters and berths. Accident and incident data from EMS helicopter operations obtained from a major helicopter manufacturer were presented and discussed. The information showed that occupants of litters experienced fewer severe injuries and fatalities than seated helicopter occupants in comparable accidents. Additionally, it was noted that FAR part 25 Transport Airplane Standards (§ 25.785(f)(3)) do not apply the 1.33 attachment factor to berths or litters. The ARAC working group concluded that the current airworthiness standards provide a high level of safety, and a change in the litter and berth standards to add the 1.33 attachment factor is not necessary at this time.

However, during an ARAC Rotorcraft Subcommittee meeting, a European Joint Airworthiness Authority (JAA) representative requested that the FAA defer any decision while the JAA reviews the accident and incident data. The JAA suggested that data may reveal a relationship between the possible application of a 1.33 attachment factor and the lack of serious occupant injuries; that is, a 1.33 attachment factor may be already included in most current designs. Therefore, this proposal is being deferred to provide for additional review by the JAA and for consideration in a future ARAC project. Therefore, no changes to §§ 27.785(k)(2) or 29.785(k)(2) are proposed in this notice.

ARAC Additional Tasks

The working group agreed to add a 1.5g rearward load factor to restrain occupants and items of mass located inside the cabin. This requirement parallels the proposed 1.5g rearward load factor for items of mass located outside the cabin. Accordingly, this NPRM proposes to amend §§ 27.561(b) and 29.561(b) to add a 1.5g rearward load factor.

ARAC Summary

The working group recommends the following load factors for §§ 27.561(c) and 29.561(c): 12.0g forward, 6.0g sideward, 12.0g downward, retaining present 1.5g upward, and adding a new 1.5g rearward to reduce the potential for hazardous movement of items of mass. The working group also recommends adding a new 1.5g rearward load factor to §§ 27.561(b)(3) and 29.561(b)(3) to enhance occupant safety. The ARAC Rotorcraft Subcommittee endorses these recommendations. The FAA accepts the recommendations and proposes to amend FAR parts 27 and 29 accordingly.

Discussion of Related Rulemaking

After the working group's meetings and deliberations, the FAA determined that it would be helpful to clarify the intent of the group's proposals relative to current cargo and baggage compartment standards. Amendments 27-27 and 29-31 (55 FR 38966, September 21, 1990) of §§ 27.787 and 29.787, respectively, require cargo and baggage compartments to restrain the compartment contents under emergency landing conditions to the extent of the load factors as specified in §§ 27.561 and 29.561. The FAA is not proposing an amendment but is providing clarification for application of the proposed changes relative to the current cargo and baggage compartment standards of §§ 27.787 and 29.787. Since baggage and cargo compartments may be located in the passenger compartment under certain operating rules, such compartments must meet the load factor requirements in §§ 27.561(b) or 29.561(b). Other cargo and baggage compartments if located "above or behind the new passenger compartment" must meet the load factor requirements in §§ 27.561(c) or 29.561(c) in accordance with §§ 27.787 or 29.787.

Current Rulemaking (Crash Resistant Fuel System)

In addition, Notice 90-24 (55 FR 41000; October 5, 1990) contained proposals to require fuel tanks located in and adjacent to the cabin to comply with standards equal to those in current §§ 27.561(b) and (c) and 29.561(b) and (c), respectively. (Refer to Proposal Nos. 3 and 9 of Notice 90-24 to add new §§ 27.952 and 29.952 to the standards.) The current intent is to consider adding (by future rulemaking) the rearward 1.5g load factor for §§ 27.561(b) and 29.561(b) and the increased load factors proposed for §§ 27.561(c) and 29.561(c) to §§ 27.952 and 29.952.

General Discussion of the Proposals

Normal and transport category rotorcraft are subject to comparable emergency landing conditions and, therefore, are subject to the same level of occupant protection contained in the emergency landing standards in §§ 27.561 and 29.561. These proposals, if adopted, respond to the recommendations for increased load factors and supplement the occupant protection standards in Amendments 27-25 and 29-29. The European Joint Airworthiness Authorities committee concurs with these proposals.

Sections 27.561 and 29.561

Sections 27.561 and 29.561 would be amended by adding a new paragraph (b)(3)(v) that would require seats and items of mass to sustain a rearward load resulting from a 1.5g load factor. This would protect occupants from impact with injurious items of mass in the event of an accident in which the normal or transport category rotorcraft sustains a rearward acceleration. Also, the load factors of paragraphs (c)(2), (3), and (4) would be increased, and paragraph (5) would be added as recommended by the ARAC subcommittee. These increased load factors would enhance protection of occupants from items of mass including cargo and baggage compartments located above and behind the crew and passenger compartment.

Regulatory Evaluation Summary

Introduction

Three economic requirements impact changes to federal regulations. First, Executive Order 12291 directs Federal agencies to promulgate new regulations or modify existing regulations only if the potential benefits to society outweigh the potential costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of

regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses or assessments, the FAA has determined that this rule: 1) would generate benefits exceeding its costs and is neither major as defined in the Executive Order nor significant as defined in DOT's Policies and Procedures; 2) would not have a significant impact on a substantial number of small entities; and 3) would not impact international trade. These analyses, available in the docket, are summarized below.

Costs

Current load factors specified in the standards have often been exceeded by manufacturers' design criteria. In many cases, sizeable increases in the load factors have been achieved by using larger bolts or fasteners and minor reinforcements to attach items of mass to the rotorcraft structure. As acknowledged by the Aviation Rulemaking Advisory Committee's Occupant Protection Working Group, present rotorcraft structures are probably strong enough to meet the proposed increases in forward, sideward, and downward load factors for external items of mass. The proposed addition of a 1.5g rearward load factor for external items of mass outside or inside the cabin as well as occupant seats would require no modifications in a design because the 12g and 16g forward load factors most likely would result in sufficient structural strength to meet the 1.5g rearward requirement.

Consequently, the proposed revisions and amendments would impose little or no incremental costs on rotorcraft manufacturers. Additionally,

they would impose little, if any, weight penalty or operating cost on rotorcraft operators.

Benefits

Occupant safety would be enhanced by the proposals, but that safety enhancement is difficult to quantify. Although separation of items of mass from the rotorcraft structure and penetration of items of mass into the occupied areas has not been a significant problem in survivable rotorcraft landings or accidents (per the FAA study, "Analysis of Rotorcraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria, "Report No. DOT/FAA/CT-85/11, June 1985), such occurrences are possible. The benefits of averting even one such occurrence would more than offset the negligible costs of the proposed rule.

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 rule has a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. Based on the criteria of implementing FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, the FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers or operators of rotorcraft.

International Trade Impact Assessment

The costs that may be imposed by the proposed rule are not significant enough to result in relative trade advantages to either U.S. or foreign entities. Therefore, the FAA has determined that it would have little

impact on the sale of foreign products domestically or the sale of the U.S. products in foreign markets.

Federalism Implications

The regulations proposed by this notice would not have substantial direct effects on the states, on the relationships 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 proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons stated above, including the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this proposed regulation is not major under Executive Order 12291. In addition, the FAA certifies that this proposal, if adopted, 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 nonsignificant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). An initial regulatory evaluation of the proposal, including a Regulatory Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under the section entitled "FOR FURTHER INFORMATION CONTACT."

List of Subjects

14 CFR Parts 27 and 29

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

THE PROPOSED AMENDMENTS

Accordingly, the FAA proposes to amend parts 27 and 29 of the Federal Aviation Regulations (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. 1344, 1354(a), 1355, 1421, 1423, 1425, 1428, 1429, 1430; and 49 U.S.C. 106(g).

2. Section 27.561 paragraph (b) is amended by adding a new subparagraph (3)(v). Paragraph (c) is amended by revising the inertial factors in subparagraphs (2), (3), and (4) and by adding new subparagraph (5) to read as follows:

§ 27.561 General

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(b) * * *

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(3) * * *

* * * * *

(v) Rearward - 1.5g

* * * * *

(c) * * *

* * * * *

(2) Forward - 12g

(3) Sideward - 6g

(4) Downward - 12g

(5) Rearward - 1.5g

PART 29-AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

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

Authority: 49 U.S.C. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; and 49 U.S.C. 106(g).

4. Section 29.561 paragraph (b) is amended by adding new subparagraph (3)(v). Paragraph (c) is amended by revising the inertial factors in subparagraphs (2), (3), and (4) and by adding new subparagraph (5) to read as follows:

§ 29.561 General

* * * * *

(b) * * *

* * * * *

(3) * * *

* * * * *

(v) Rearward - 1.5g

* * * * *

(c) * * *

* * * * *

(2) Forward - 12g

(3) Sideward - 6g

(4) Downward - 12g

(5) Rearward - 1.5g

Issued in Washington, DC, on

U.S. Department
of Transportation

**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

MAR 2 1995

Mr. Theodore E. Dumont
Assistant Chair for Rotorcraft Issues
Aviation Rulemaking Advisory Committee
1101 Naugatuck Avenue
Milford, CT 06460-2317

Dear Mr. Dumont:

In response to the task announced in the Federal Register on December 4, 1991 (56 FR 63545), the Aviation Rulemaking Advisory Committee (ARAC) developed a notice of proposed rulemaking (NPRM) to amend airworthiness standards to improve occupant protection in normal and transport category rotorcraft. Comments received in response to the NPRM were considered to be non-substantive; consequently, the final action will be developed internally by the Federal Aviation Administration (FAA).

Again, let me thank ARAC and, in particular, the Occupant Protection Working Group for its dedicated efforts in completing the task assigned by the FAA.

If you have any questions, please contact Mr. Mark Schilling at (817) 222-5110.

Sincerely,

Anthony J. Broderick
Associate Administrator for
Regulation and Certification

federal register

Monday
April 11, 1994

Part II

Department of Transportation

Federal Aviation Administration

14 CFR Parts 27 and 29
Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No. 27681; Notice No. 94–8]

RIN 2120–AE88

Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to improve occupant protection standards in normal and transport category rotorcraft. The proposed standards would significantly increase the static design ultimate inertial load factors for restraining heavy items located above or behind the occupied areas during emergency landings. These increased load factors would also apply to certain fuel, cargo, and baggage compartments. These proposals would further enhance occupant protection and complement the standards previously adopted for occupant restraint in normal and transport category rotorcraft in the event of a survivable emergency landing.

DATES: Comments must be received on or before July 11, 1994.

ADDRESSES: Comments on this notice should be mailed or delivered in triplicate to: Federal Aviation Administration (FAA), Office of the Chief Counsel, Attn: Rules Docket (AGC–10), Docket No. 27681, 800 Independence Avenue, SW., Washington, DC 20591. Comments may be examined in Room 915G weekdays between 9 a.m. and 5 p.m., except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. James H. Major, Regulations Group (ASW–111), Rotorcraft Directorate, Aircraft Certification Service, FAA, Fort Worth, Texas 76193–0111, telephone number (817) 624–5117.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to submit written data, views, or arguments on this proposed rule. 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 should identify the regulatory docket number and should be submitted in triplicate to the Rules Docket address specified above. All communications received on or before the closing date for comments will be considered by the Administrator before taking action on this proposed rule. The proposals contained in this notice may be changed in light of the comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each substantive public contact with FAA personnel concerned with this rulemaking will be filed in the docket. 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. 27681." The postcard will be date stamped and mailed to the commenter.

Availability of NPRM's

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Office of Public Affairs, Attn: Public Inquiry Center, APA–200, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–3484. 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, Notice of Proposed Rulemaking Distribution System, which describes the application procedures.

Background

On June 3, 1987, the FAA issued NPRM No. 87–4 (52 FR 20938) to amend the rotorcraft airworthiness standards to improve occupant protection in the event of a survivable emergency landing. Comments and alternative proposals were received at a public meeting on April 20, 1988, in Fort Worth, Texas. Written comments and alternative proposals submitted are contained in Rules Docket No. 25287.

As part of the notice, the FAA proposed that Federal Aviation Regulations (FAR) §§ 27.561(c) and 29.561(c) contain an increased "forward" static design ultimate inertial load factor (load factor) for external items of mass located above or behind the occupants. The increased load factors proposed by Notice No. 87–4 were based on information in Report No. DOT/FAA/CT–85/11, "Analysis of Rotorcraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria," June 1985. This report is contained in Rules Docket No. 25287. In comments to NPRM No. 87–4, the Aerospace Industries Association (AIA) and others recommended increasing the existing load factors for sideward and downward loads and further increasing the proposed forward load factor. These recommendations were more restrictive than the standards proposed and could not be adopted without proper public notice and procedure. The proposals in Notice No. 87–4 were adopted as a final rule in Amendments 27–25 and 29–29 (54 FR 47310, November 13, 1989). The FAA stated in the preamble to the final rule that it would consider the comments to Notice No. 87–4 as a basis in any future rulemaking activity.

On February 13, 1992, following an announcement in the **Federal Register** (56 FR 63545, December 4, 1991), a working group chartered by the Aviation Rulemaking Advisory Committee (ARAC) met to consider certain recommendations submitted to Rules Docket 25287. The working group, chaired by a representative from AIA, included technical specialists in crash dynamics loads and design criteria from two major helicopter manufacturers and representatives from the National Business Aircraft Association (NBAA), Helicopter Association International (HAI), Emergency Medical Services (EMS), and the 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.

Two tasks were assigned by the ARAC to the working group, as follows:

Task 1

Determine the need for new or revised standards and make a recommendation concerning whether the design load factors should be increased for items of mass located above and behind, above, or behind the passenger compartment.

Task 2

Determine the need for new or revised standards and make a recommendation concerning whether §§ 27.785(f)(2) and 29.785(f)(2) should be clarified to specify the 1.33 fitting factor for seats also applies to berths and litters.

ARAC Task 1 Synopsis

The working group explored the merits of the increases in load factors and of an additional rearward load factor of 1.5g. Discussion centered on the potential increase in safety, current design practices, weight impact, and benefit versus cost of the proposed changes.

At the request of the ARAC working group, a manufacturer's technical specialist explained how the AIA ascertained the following proposed increased load factors: a forward load factor increase from 8g to 12g, a sideward load factor increase from 2g to 6g, and a downward load factor increase from 4g to 12g.

An AIA rotorcraft committee reached a consensus on the proposed load factors after determining that the increased load factors are more compatible with occupant restraint requirements than are current load factors for items of mass. This determination of increased load factors for items of mass included a review which showed that current design practices to meet stiffness and fatigue requirements provide sufficient backup structure to restrain items of mass with minimal increase in attachment strength requirements. This committee proposed increases in the required load factors that would enhance occupant safety without introducing changes to current design practices.

The ARAC working group concluded that safety would be enhanced by the proposed changes. The number of lives saved could not be quantified from information available to the AIA Crash Dynamics working group that was formed before issuance of NPRM No. 87–4. The ARAC working group agreed that the potential for increased safety resulting from the changes justified the need for preparing an FAA benefits and cost comparison. A summary of the resulting benefits and cost comparison is included in this notice.

The ARAC working group determined that the proposal to add a new 1.5g rearward load factor would: (1) Provide an appropriate structural design condition for seats and (2) enhance safety. They also determined that the cost impact would be minimal because the proposed 12g forward load factor would provide inherently a 1.5g rearward capability.

The ARAC working group determined that certification costs for analysis or tests to substantiate compliance with the proposed changes would be negligible. Further, the working group technical specialists agreed that the increased load factors would have minimal and in some cases no weight impact on a new rotorcraft design, particularly when current design practices are considered.

ARAC Task 2 Synopsis

The working group studied the use of a 1.33 attachment factor for litters and berths. Accident and incident data from EMS helicopter operations obtained from a major helicopter manufacturer were presented. The information showed that occupants of litters experienced fewer severe injuries and fatalities than seated helicopter occupants in comparable accidents. Additionally, it was noted that part 25 transport airplane standards (§ 25.785(f)(3)) do not apply the 1.33 attachment factor to berths or litters, and no significant need for increased crashworthiness for large airplanes has been documented; i.e., no one has proposed the addition of the 1.33 attachment factor to § 25.785(f). The ARAC working group concluded, based on an analysis of rotorcraft accident information and similar standards in part 25, that the current airworthiness standards provide a high level of safety, and that a change in the litter and berth standards to add the 1.33 attachment factor is not necessary at this time.

However, during an ARAC meeting, a European Joint Airworthiness Authority (JAA) representative requested that the FAA defer any decision while the JAA reviews the accident and incident data. The JAA suggested that data may reveal a relationship between the possible application of a 1.33 attachment factor and the lack of serious occupant injuries; that is, a 1.33 attachment factor may be already included in most current designs. Therefore, this proposal is being deferred to provide for additional review by the JAA and for possible consideration in a future ARAC project.

ARAC Summary

The working group, and subsequently the ARAC, recommended that the FAA revise the certification standards for normal and transport category rotorcraft by increasing the load factor requirements in §§ 27.561(c) and 29.561(c). Specifically, the ARAC recommended the following changes: a forward load factor increase from 8g to 12g, a sideward load factor increase from 2g to 6g, a downward load factor increase from 4g to 12g, and the addition of a new rearward load factor of 1.5g. ARAC also recommended adding a new rearward load factor of 1.5g to §§ 27.561(b) and 29.561(b).

FAA Evaluation of ARAC Recommendation

The FAA has reviewed the information contained in the ARAC recommendation in conjunction with comments to Notice of Proposed Rulemaking (NPRM) No. 87–4. During this review the FAA evaluated the tests and analyses that support load factors higher than those proposed in NPRM No. 87–4; these are the load factors proposed in this notice. The FAA specifically evaluated comments to NPRM No. 87–4 by the AIA and the British Civil Aviation Authority (CAA). These comments are contained in Rules Docket No. 25287. The AIA and CAA comments include various new and increased load factors ranging from 9g to 12g for a forward load factor and 6.5g to 12g for a downward load factor that were evaluated by the ARAC. The ARAC review of these various load factors resulted in a proposal to increase the forward load factor from 8g to 12g, the sideward load factor from 2g to 6g, the downward load factor from 4g to 12g, and to add a new rearward load factor of 1.5g. The new and increased load factors can be met by current rotorcraft designs with small increases in attachment sizes and with the resultant minimum increase in cost.

The FAA concluded that the ARAC proposals incorporate the best combination of new and increased load factors recommended in the AIA and CAA proposals. Crashworthiness would be improved through significant increases in strength for retention of items of mass, such as engines and transmissions, with negligible increases in cost and weight. Also, the FAA evaluation showed that the increased factors for retention of items of mass complement the higher load factors for occupant restraint contained in §§ 27.561(b) and 29.561(b). Accordingly, the FAA has determined that the benefits of increasing the load factors for items of mass located above or behind occupied areas would outweigh any cost of providing the necessary increased attachment and support strength.

Discussion of Related Rules

After the working group's meeting and deliberations, the FAA determined that it would be helpful to clarify the intent of the group's proposals relative to current cargo and baggage compartment standards. Amendments 27–27 and 29–31 (55 FR 38966, September 21, 1990) to §§ 27.787 and 29.787, respectively, require cargo and baggage compartments to restrain the compartment contents under emergency landing conditions to the extent of the load factors as specified in §§ 27.561 and 29.561. The FAA is not proposing amending these sections but is providing clarification for application of the proposed changes relative to the current cargo and baggage compartment standards of §§ 27.787 and 29.787. Since baggage and cargo compartments may be located in the passenger compartment under certain operating rules, such compartments must meet the load factor requirements in §§ 27.561(b) or 29.561(b). Other cargo and baggage

compartments if located "above or behind the new passenger compartment" must meet the load factor requirements in §§ 27.561(c) or 29.561(c) in accordance with §§ 27.787 and 29.787.

General Discussion of the Proposals

Normal and transport category rotorcraft are subject to comparable emergency landing conditions and, therefore, are subject to the same level of occupant protection contained in the emergency landing standards in §§ 27.561 and 29.561. These proposals, if adopted, respond to the recommendations for increased load factors and supplement the occupant protection standards in Amendments 27–25 and 29–29. The European Joint Airworthiness Authorities committee concurs with these proposals.

Sections 27.561 and 29.561

Sections 27.561 and 29.561 would be amended by adding a new paragraph (b)(3)(v) that would require seats and items of mass to sustain a rearward load resulting from a 1.5g load factor. This would further protect occupants from impact with injurious objects behind the occupant in the event of an accident. Also, the load factors of paragraphs (c)(2), (3), and (4) would be increased, and paragraph (5) would be added as recommended by the ARAC. These increased load factors would enhance protection of occupants from items of mass including cargo and baggage compartments located above or behind the crew and passenger compartment.

Regulatory Evaluation Summary

Introduction

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs Federal agencies to promulgate new regulations or modify existing regulations only if the potential benefits to society outweigh the potential costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses or assessments, the FAA has determined that this rule: (1) Would generate benefits exceeding its costs and is nonsignificant as defined in Executive Order 12866; (2) is not significant as defined in DOT's Policies and Procedures; (3) would not have a significant impact on a substantial number of small entities; and (4) would not affect international trade. These analyses, available in the docket, are summarized below.

Costs

As noted previously, the increased forward, sideward, and downward load factors could be accommodated without introducing changes to current design practices. In many cases, sizeable increases in load factors have been met by the use of larger bolts and/or fasteners and minor reinforcements to attach items of mass to the rotorcraft structure. The proposed addition of 1.5g rearward load factors for items of mass outside or inside the cabin would require no production modifications because the 12g and 16g forward load factors would inherently result in sufficient structural strength to meet the 1.5g rearward requirement.

Consequently, the proposed revisions and amendments would impose little or no incremental costs on rotorcraft manufacturers. Additionally, they would impose no or minimal weight penalties and operating costs on rotorcraft operators.

Benefits

Occupant safety would be enhanced by the proposals, but is difficult to quantify. The FAA study, "Analysis of Rotocraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria" (Report No. DOT/FAA/CT–85/11, June 1985), identified separation of items of mass from the rotorcraft structure and penetration into occupied areas as one of 14 hazards associated with otherwise survivable rotorcraft accidents. Such penetration occurrences resulted in approximately one injury (at least moderate) per year. The benefits of averting just one such occurrence would more than offset the negligible costs of the proposed rule. The FAA, therefore, finds the proposed changes to 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 rule has a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. Based on the criteria of FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, the FAA has determined that the proposed rule would not have a significant economic impact on a substantial number of small manufacturers or operators of rotorcraft.

International Trade Impact Assessment

The proposed rule would have no effect on the sale of foreign products domestically or the sale of U.S. products in foreign markets.

Federalism Implications

The regulations proposed by this notice would not have substantial direct effects on the states, on the relationships 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 proposal would not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons stated above, including the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this proposed regulation is not a significant regulatory action under Executive Order 12866. In addition, the FAA certifies that this proposal, if adopted, 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 not considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). An initial regulatory evaluation of the proposal, including a Regulatory Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under the section entitled "FOR FURTHER INFORMATION CONTACT."

List of Subjects in 14 CFR Parts 27 and 29

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

The Proposed Amendments

Accordingly, the Federal Aviation Administration proposes to amend parts 27 and 29 of the Federal Aviation Regulations (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. 1344, 1354(a), 1355, 1421, 1423, 1425, 1428, 1429, 1430; and 49 U.S.C. 106(g).

2. Section 27.561 is amended by adding new paragraphs (b)(3)(v) and (c)(5) and revising paragraphs (c)(2), (c)(3), and (c)(4) to read as follows:

§ 27.561 General.

* * * * *

(b) * * *

(3) * * *

(v) Rearward—1.5g

(c) * * *

(2) Forward—12g

(3) Sideward—6g

(4) Downward—12g

(5) Rearward—1.5g

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

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

Authority: 49 U.S.C. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; and 49 U.S.C. 106(g).

4. Section 29.561 is amended by adding new paragraphs (b)(3)(v) and (c)(5) and revising paragraphs (c)(2), (c)(3), and (c)(4) to read as follows:

§ 29.561 General.

* * * *

(b) * * *

(3) * * *

(v) Rearward—1.5g

(c) * * *

(2) Forward—12g

(3) Sideward—6g

(4) Downward—12g

(5) Rearward—1.5g

* * * * *

Issued in Washington, DC, on April 4, 1994.

Elizabeth Yoest,

Acting Director, Aircraft Certification Service.

[FR Doc. 94-8481 Filed 4-8-94; 8:45 am]

BILLING CODE 4910-13-M

federal register

Wednesday
March 13, 1996

Part III

Department of Transportation

Federal Aviation Administration

14 CFR Parts 27 and 29
Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 27 and 29

[Docket No. 27681; Amendment No. 27–32, 29–38]

RIN 2120–AE88

Airworthiness Standards; Occupant Protection in Normal and Transport Category Rotorcraft

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: The Federal Aviation Administration (FAA) is amending the airworthiness standards to improve occupant protection in normal and transport category rotorcraft. These amended standards significantly increase the static design ultimate inertial load factors for restraining heavy items located above or behind the occupied areas during emergency landings. These increased load factors also apply to certain cargo and baggage compartments. These amendments further complement and enhance the standards previously adopted for occupant restraint and protection in normal and transport category rotorcraft in the event of a survivable emergency landing.

EFFECTIVE DATE: June 11, 1996.

FOR FURTHER INFORMATION CONTACT: Mr. Mike Mathias, Regulations Group, Rotorcraft Directorate, Aircraft Certification Service, FAA, Forth Worth, Texas 76193–0111, telephone number (817) 222–5110.

SUPPLEMENTARY INFORMATION:

Background

These amendments are based on Notice of Proposed Rulemaking (NPRM) No. 94–8, which was published in the **Federal Register** on April 11, 1994 (59 FR 17156). That notice proposed to amend the occupant protection airworthiness standards of 14 CFR parts 27 and 29 (parts 27 and 29) to increase the ultimate inertial load factors in §§ 27.561(c) and 29.561(c) and to add a new 1.5g rearward design load factor to §§ 27.561(b) and 29.561(b). The amended standards of §§ 27.561(c) and 29.561(c) would apply to restraining heavy items located above and behind the cabin and other occupied areas against the loads created during emergency landings; and the amended standards of §§ 27.561(b) and 29.561(b) would apply to restraining and protecting occupants and restraining heavy items in the cabin and other occupied areas against the loads created during emergency landings. In addition, the amended standards of §§ 27.561 (b) and (c) and 29.561 (b) and (c) would apply to current cargo and baggage compartment standards by their reference within the text of §§ 27.787 and 29.787.

The Crash Resistant Fuel Systems (CRFS) in Normal and Transport Category Rotorcraft Final Rule, Amendments 27–30 and 29–35 (59 FR 50380, October 3, 1994), amended the fuel tank and compartment standards of §§ 27.963 and 29.963 (which utilized the inertial factors contained in §§ 27.561 and 29.561, respectively) to specifically state the CRFS inertial factor standards in §§ 27.952(b)(2) and 29.952(b)(2). However, the specific inertial factors adopted in §§ 27.952(b)(2) and 29.952(b)(2) for fuel tanks located above or behind the occupied areas are lower than those factors adopted in these amendments. The FAA will consider whether further rulemaking is necessary to increase the inertial load factors for CRFS design in §§ 27.952(b)(2) and 29.952(b)(2) to the levels of those adopted in §§ 27.561(c) and 29.561(c) of these amendments.

In summary, occupant protection will be enhanced through the increased strength requirements for retention of items of mass, such as engines, transmissions, and baggage and cargo compartment contents located above or behind occupied areas. These amended standards stem from recommendations from the Aviation Rulemaking Advisory Committee (ARAC) to increase certain design inertial load factors. These amended standards will complement and enhance the occupant protection standards adopted by Amendments 27–25 and 29–29 (54 FR 47310, November 13, 1989) for survivable emergency landings.

Discussion of Comments

Interested persons have been afforded an opportunity to participate in the making of these amendments. Due consideration has been given to the comments received from the four commenters. The commenters are the Civil Aviation Authority (CAA) Australia, the Airline Pilots Association (ALPA), the Association Europeene des Constructeurs de Material Aerospatial (AECMA), and the National Transportation Safety Board (NTSB).

The CAA agrees that increased design inertial load factors are appropriate but questions the logic in the difference between design factors for occupant restraint and protection previously adopted for interior items and the proposed factors for restraint of external items. This commenter recommends adoption of the larger design inertial factors found in §§ 27.561(b) and 29.561(b) applicable to restraint of occupants and cabin items rather than the factors proposed. The commenter highlights the differences between the two sets of design inertial factors.

ALPA supports the proposal but requests that the FAA determine if the proposed 1.5g rearward inertial factor for seats is sufficient in light of a possible emergency landing scenario in which the rotorcraft would itself rotate 180 degrees and cause the seats and occupants to exceed the 1.5g design inertial load factor.

AECMA notes that publication and prompt adoption of the final rule as proposed are essential to harmonize these sections of the Federal Aviation Regulations with the comparable European Joint Aviation Regulations (JAR) 27 and 29 Rotorcraft Standards.

The NTSB comments that the proposed standards represent a significant advancement in occupant protection and in crashworthiness of normal and transport category rotorcraft and supports the proposal.

The FAA acknowledges the CAA's concern with proposed differing design inertial factors and attempted to address these concerns in the preamble of Notice No. 94–8 under the heading "FAA Evaluation of ARAC Recommendation." In addition, the information in Report No. DOT/FAA/CT–85/11, "Analysis of Rotorcraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria," June 1985, was the genesis for the inertial factors contained in a previous amendment to §§ 27.561 and 29.561. According to that report, inertial factors for restraint of external items can safely differ from the factors for interior items since severe injury due to penetration into the cabin is not identified as a significant hazard in that earlier report. However, the increased design inertial factors proposed in Notice 94–8 will improve both occupant protection from external items and rotorcraft structural crashworthiness.

The FAA understands ALPA's concern about the adequacy of the 1.5g rearward load factor in the event of an emergency landing impact in which the rotorcraft fuselage is either fully or partially reversed for some time interval during the overall impact sequence. Some cases of reverse impact could exceed the proposed rearward load factor. However, FAA research has considered the overall spectrum of reverse impacts and that research shows that occurrences of severe, sustained reverse impacts are remote. This

research also shows that reverse impacts constitute an extremely small portion of all rotorcraft impacts. In addition, the research shows that the gravity forces felt by occupants are significantly less in most reverse impacts because of the larger crushing distances inherent in most rotorcraft aft fuselage structures and because the reverse direction of the impact is typically not sustained. Additional fuselage motion such as tumbling and further rotation usually occur, thus the full impact is not in a reverse direction. Therefore, the total impact energy dissipated in a reverse impact is considered minimal. In addition, the complementary inertial design factors in §§ 27.561(b) and 29.561(b), as well as the companion dynamic test standards in §§ 27.562 and 29.562, inherently provide strength for occupant protection in the event of a reverse impact. Therefore, the FAA has determined that the 1.5g rearward inertial factor is an adequate, practical safety standard.

In response to AECMA's concern that the publication date of this final rule correspond to the publication date of the JAR amendment, the FAA is committed to processing this final harmonized rule so that it can be published as near as possible to the publication date of the JAR.

The CAA also recommends application of a 1.33 inertial attachment factor for litter and berth installations as a logical application of the seat design standard found in §§ 27.785(f)(2) and 29.785(f)(2) but recognizes that this request exceeds the scope of the proposal. The CAA further recommends a research program to address litter installations and litter occupant protection. To improve protection of litter occupants, the FAA anticipates conducting an internal FAA research program to address litter installations for airplanes and rotorcraft.

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

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 effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Will generate benefits exceeding its costs and is not significant as defined in Executive Order 12866; (2) is not significant as defined in DOT's Policies and Procedures; (3) will not have a significant impact on a substantial number of small entities; and (4) will not affect international trade. These analyses, available in the docket, are summarized below.

Cost-Benefit Analysis

The increased forward, sideward, and downward load factors can be accommodated without changing current design practices. In many cases, sizable increases in load factors have been achieved by the use of larger bolts and/or fasteners and minor reinforcements to attach items of mass to the rotorcraft structure. The addition of 1.5g rearward load factors will require no design or production modifications because the 12g and 16g forward load factors of the new and current standards will inherently result in sufficient structural strength to meet this rearward requirement.

Consequently, the amendments that add and revise requirements will impose little or no incremental costs on rotorcraft manufacturers. Additionally, they will impose no or minimal weight penalties and operating costs on rotorcraft operators.

Occupant safety will be enhanced by the amendments, but this enhancement is difficult to quantify. The FAA study, "Analysis of Rotorcraft Crash Dynamics for Development of Improved Crashworthiness Design Criteria" (Report No. DOT/FAA/CT–85/11, June 1985), identified separation of items of mass from the rotorcraft structure and penetration into occupied areas as one of 14 hazards associated with otherwise survivable rotorcraft accidents. Such occurrences have resulted in approximately one injury (of at least moderate severity) per year. The benefits of averting just one such occurrence will more than offset the negligible costs of the rule. The FAA therefore finds the rule to 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 Federal regulations. The RFA requires a Regulatory Flexibility Analysis if a rule has significant economic impact on a substantial number of small entities. FAA Order 2100.14A outlines FAA's procedures and criteria for implementing the RFA. The FAA has determined that this rule will not have a significant economic impact on a substantial number of small manufacturers or operators of rotorcraft because there are no small rotorcraft manufacturers, as that term is defined in the Order.

International Trade Impact Assessment

This rule will not constitute a barrier to international trade, including the export of American goods and services to foreign countries and the import of foreign goods and services into the United States. Each applicant for a new type certificate for a transport or normal category rotorcraft, whether the applicant be U.S. or foreign, will be required to show compliance with this rule. This rule will have no effect on the sale of U.S. rotorcraft in foreign markets and the sale of foreign rotorcraft in the United States.

Federalism Implications

The regulations adopted herein will not have substantial direct effects on the states, on the relationships 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 regulation will not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons stated above, including the findings of the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this regulation is not a significant regulatory action under Executive Order 12866. In addition, the FAA certifies that this regulation will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This rule is not considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A regulatory evaluation of this regulation, including a Regulatory Determination and Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under the section entitled **FOR FURTHER INFORMATION CONTACT.**

List of Subjects in 14 CFR Parts 27 and 29

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

The Amendments

Accordingly, the Federal Aviation Administration amends 14 CFR parts 27 and 29 of the Federal Aviation Regulations 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. Section 27.561 is amended by adding new paragraphs (b)(3)(v) and (c)(5) and by revising paragraphs (c)(2), (c)(3), and (c)(4) to read as follows:

§ 27.561 General.

* * * * *

(b) * * *

(3) * * *

(v) Rearward—1.5g.

(c) * * *

(2) Forward—12g.

(3) Sideward—6g.

(4) Downward—12g.

(5) Rearward—1.5g.

* * * * *

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

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

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

4. Section 29.561 is amended by adding new paragraphs (b)(3)(v) and (c)(5) and by revising paragraphs (c)(2), (c)(3), and (c)(4) to read as follows:

§ 29.561 General.

* * * * *

(b) * * *

(3) * * *

(v) Rearward—1.5g.

(c) * * *

(2) Forward—12g.

(3) Sideward—6g.

(4) Downward—12g.

(5) Rearward—1.5g.

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Issued in Washington, DC, on March 8, 1996.

David R. Hinson,

Administrator.

[FR Doc. 96–6019 Filed 3–12–96; 8:45 am]

BILLING CODE 4910–13–M