DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 21, 27, 29, and 91

[Docket No. 26078; Amdts. 21-69, 27-28, 29-32, and 91-223]

RIN 2120-AC67

Airworthiness Standards; Shoulder Harnesses in Normal and Transport Category Rotorcraft

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This final rule amends the airworthiness and operating regulations to require installation and use of shoulder harnesses at all seats of rotorcraft manufactured after September 16, 1992. These amendments respond to a safety recommendation from the National Transportation Safety Board and are intended to enhance protection of occupants in rotorcraft.

DATES: *Effective date:* September 16, 1991.

Compliance date: September 16, 1992.

FOR FURTHER INFORMATION CONTACT: Mr. James H. Major, FAA, Rotorcraft Standards Staff, ASW-111, Fort Worth, Texas 76193-0111; telephone (817) 624-5117 or FTS 734-5117.

SUPPLEMENTARY INFORMATION:

Background

These amendments are based on notice of proposed rulemaking (NPRM) No. 89-32, which was published in the **Federal Register** on December 8, 1989 (54 FR 50688). The NPRM proposed to amend parts 21, 27, 29, and 91 of the Federal Aviation Regulations (FAR) to require mandatory installation and use of shoulder harnesses (also called upper torso restraints) at all seats of rotorcraft, regardless of the type certification basis or the seat orientation or location. In addition, the NPRM proposed that the standards would apply to all domestic rotorcraft and foreign rotorcraft imported into the United States that are manufactured after 1 year after publication of the amendments in the **Federal Register**. These amendments respond to National Transportation Safety Board (NTSB) Recommendation No. A-85-70 to enhance protection of rotorcraft occupants during a "minor crash landing," as specified in §§ 27.561 and 29.561 in effect prior to December 1989.

In the notice the FAA specified that the minor crash landing condition strength standards of the original rotorcraft type design certification basis, such as 4.0 g's forward, etc., for present helicopter designs would be applicable. The increased static strength standards and dynamic test standards of Amendments 27-25 and 29-29 (54 FR 47310, November 13, 1989) apply only to new rotorcraft type designs. In the notice, it was pointed out that § 91.107 applies to aircraft operations, including rotorcraft, and mandates the use of shoulder harnesses whenever installed in an aircraft. Also, the Technical Standard Order (TSO) system provides in TSO-C114 minimum performance standards for a safety belt and shoulder harness, also known as a Torso Restraint System. Inasmuch as the TSO contains strength standards that exceed the standards contained in these amendments, it is also acceptable for meeting the strength requirements of these amendments.

In addition, TSO-C22 contains minimum performance standards (e.g., 1500-pound) for a one-person safety belt. Combined safety belts and shoulder harnesses were previously approved under this earlier TSO and were installed as an optional feature for many rotorcraft designs. A combined safety belt and shoulder harness manufactured under a TSO-C22 approval may be eligible for installation in compliance with this rulemaking, provided the safety belt and shoulder harness otherwise comply with the applicable airworthiness standards.

All interested persons have been given an opportunity to participate in this rulemaking, and due consideration has been given to all matters presented. Seven commenters, representing rotorcraft manufacturers, an operator, industry groups, airworthiness authorities of other countries, and the NTSB, responded to the NPRM. All but one of the commenters agree with the proposal for mandatory installation and use of shoulder harnesses; however, they do express concerns and make recommendations for changes in the standards. The following discussion contains these recommendations and their disposition.

Discussion of Comments

Sections 21.17 and 21.101 Designation of Applicable Regulations

The notice proposed to amend these procedural rules by adding the new retroactive requirements of §§ 27.2 and 29.2. No comments were received. Therefore, the amendments are adopted as proposed.

Sections 27.2 and 29.2 Special Retroactive Requirements

The notice proposed to add these new standards requiring a shoulder harness (upper torso restraint) at each seat of U.S.-registered civil rotorcraft manufactured after 1 year after publication of the amendments in the **Federal Register**. The shoulder harness installation would have to comply with the original rotorcraft certification standards including § 27.785 (b) and (c) or § 29.785 (b) and (c).

An industry commenter supports this change. In addition, the NTSB supports the proposals but recommends that both manufacturers and operators install shoulder harnesses at all seats if the rotorcraft contains structural provisions that accept harnesses installation irrespective of the date of rotorcraft manufacture. The NTSB's suggestion to require a retrofit of existing rotorcraft structurally capable of the harness installation was not adopted because it would be technically impracticable and economically unreasonable for operators to determine which of their rotorcraft, without being modified, were structurally capable of accepting the shoulder harness installations. Also, an additional regulatory evaluation to assess the benefits and costs of such a retrofit requirement would be necessary. Additionally, the FAA determined that manufacturers should be permitted 1 year from the effective date of these amendments to incorporate the design, engineering, and production changes necessary to comply with them.

An international operator recommends that a better approach to accident prevention is improved rotorcraft designs and use of health and usage monitoring systems rather than improved injury prevention or occupant protection standards, as proposed. Nonetheless, the FAA contends that enhanced occupant protection is a viable means of improving occupant safety, since accidents will continue to occur because of operational errors even if all design faults are eliminated. For example, on page 216 of the "Helicopter Association International 1988 Helicopter Annual," the author stated, "The past 10 years of accident data show that 83% of the accidents (218 accidents annual average) are caused by errors in operational techniques and decision making (42.2% and 40.8% respectively)." Thus, fewer than 20 percent of the accidents may be attributed to rotorcraft designs or material faults, and improved occupant protection is warranted.

No comments were received on the proposed compliance date or the proposed effective date of these changes. However, consistent with FAA rulemaking practice, the compliance date has been extended approximately 30 days in the final rule by adopting a compliance date that is 1 year after the effective date, rather than the publication date, of the amendments.

Commenters requested clarification of the applicable strength standards to employ for this retroactive requirement. Accordingly, §§ 27.2 and 29.2 have been revised by including safety belt and harness design requirements and strength standards, and the paragraphs defining the date of rotorcraft manufacture have been relocated. Since §§ 27.2 and 29.2 are now self-contained, the references to § 27.785 (b) and (c) and § 29.785 (b) and (c) are unnecessary and have been removed. The proposals are, therefore, adopted with these editorial changes.

Section 91.205 Powered Civil Aircraft With Standard Category U.S. Airworthiness Certificates; Instrument and Equipment Requirements

The notice proposed a new paragraph to require installation of a shoulder harness for each seat as a condition for operation of rotorcraft manufactured after 1 year publication of the final rule in the **Federal Register**. The operating rule complements proposed §§ 27.2 and 29.2.

No comments were received on this proposal. However, as noted previously, the compliance date has been extended. In addition, rather than referring to §§ 27.785 (b) and (c) and 29.785 (b) and (c), the rule has been revised to refer to §§ 27.2 and 29.2, which contain the necessary safety belt and harness design standards for the reasons cited previously. Other than these changes, the amendment is adopted as proposed.

Strength Standards

The applicable strength standards for normal and transport category rotorcraft are referenced in §§ 27.785 and 29.785, respectively. In the preamble to the notice, the FAA stated that the strength standards of the particular rotorcraft certification basis would continue to apply to approval of the mandated combined safety belt and shoulder harness installation.

One commenter emphasizes that application or retention of the strength standards contained in the rotorcraft type certification basis is essential. The FAA agrees. The proposal and the economic analysis were based on retaining the original type certification strength standards, while at the same time applying retroactive shoulder harness design requirements. New §§ 27.2 and 29.2 are adopted as proposed with editorial changes for clarity as already discussed.

Another commenter believes that use of the design standards in the particular rotorcraft design type certification basis, such as 4.0 g's forward inertial factor, etc., is inadequate and that the inertial deceleration factors expected in a survivable crash should be adopted in this rulemaking. Since the proposals respond to a safety recommendation to enhance occupant protection for newly produced rotorcraft of older designs, the comment is beyond the scope of the notice. The standards adopted in Amendment 27–25 and 29–29 (54 FR 47310, November 13, 1989) significantly increase static strength requirements and add dynamic test requirements for improved occupant protection in a survivable landing impact for new rotorcraft designs. Those amendments respond to the commenter's objective for newly designed rotorcraft and, therefore, no changes are necessary.

A commenter also recommends an additional requirement to assure that any safety belt and shoulder harness would not be installed or otherwise constructed in a way that compromises occupant safety in a survivable crash. Since the installation of the belt and harness must not interfere with the occupant's rapid egress as stated in existing § 27.785(c) and § 29.785(c) and as newly adopted in §§ 27.2(a) and 29.2(a), the commenter's concern is addressed in the current standards.

Evacuation Provisions

A commenter states that interior clutter from items such as a shoulder harness impedes evacuation of a flooded cabin that may occur after a ditching in water. Sections 27.2(a) and 29.2(a), as adopted, require a single-point release and a means to secure the belt and harness, if necessary, to prevent interference with rapid egress in an emergency; therefore, the commenter's concerns are adequately covered by the new regulation.

Another commenter is concerned about the potential for unacceptable degradation of the emergency evacuation provisions with the use of shoulder harnesses and recommends guidance material to supplement the standards. The commenter further suggests that rotorcraft evacuation tests may be necessary for rotorcraft that hold 45 or more passengers whenever harnesses are installed. Section 29.803 (as amended by Amendment 29–30, 55 FR 7992, March 6, 1990) requires, for new rotorcraft designs, an evacuation demonstration for certain designs, including those that hold 45 or more passengers. An evacuation demonstration was not required before adoption of Amendment 29–30. The installation and use of harnesses for the larger rotorcraft designs should not appreciably degrade evacuation provisions because §§ 27.2(a) and 29.2(a), as adopted, require both a single-point release for the belt and harness and a means to secure the belt and harness, if needed, to prevent interference with rapid egress in an emergency. The FAA notes the commenter's concerns and will monitor initial installations of harnesses for the larger transport category rotorcraft designs. In addition, advisory material will be used, as needed.

Economic Concerns

An international operator, with experience in operating a fleet of rotorcraft, observed that in several fatal and serious injury accidents, shoulder harnesses would have been beneficial in only one of those accidents. The commenter contends that shoulder harnesses prevent passengers from assuming the head-on-knees (brace) position and that passengers are more susceptible to spinal injury in this upright position. According to data stated in the preamble of the notice, installation and use of a shoulder harness that restrains an occupant from potential secondary impact and that properly supports the upper torso for the vertical impact loads, when used in conjunction with a safety belt, will significantly enhance safety of the occupants in 52 to 68 percent of rotorcraft impacts.

The commenter further notes a potential inconsistency for those operators who operate new helicopters with shoulder harnesses while also operating the same, but older, model helicopters without any harnesses. With 1,600 seats in the commenter's fleet of helicopters, the commenter concludes that the cost of equipping these aircraft with harnesses should be included in the economic analysis. The commenter contends that the economic impact analysis should address the cost of retrofitting all older helicopters even though not mandated by the rule.

The FAA did not proposed mandatory installation of shoulder harnesses for the current fleet of helicopters because it is expected that the costs would exceed the safety benefits. The cost of voluntary "retrofit" of the older helicopters is not a "regulatory" cost of implementing the standards. That is an

optional consideration and decision for helicopter operators.

Regulatory Evaluation Summary

Regulatory Evaluation

This section summarizes the regulatory evaluation prepared by the FAA for this regulatory action. This summary outlines the estimated costs to the private sector, consumers, and Federal, State, and local governments, as well as the anticipated benefits.

Executive Order 12291, dated February 17, 1981, directs Federal agencies to promulgate new regulations or modify existing regulations only if potential benefits to society for each regulatory change outweigh potential costs. The order also requires the preparation of a Regulatory Impact Analysis of all "major" rules except those responding to emergency situations or other narrowly defined exigencies. A "major" rule is one that is likely to result in an annual effect on the economy of $100 million or more, a major increase in consumer costs, or a significant adverse effect on competition.

The FAA has determined that this rule is not "major" as defined in the executive order; therefore, a full regulatory analysis that includes the identification and evaluation of cost-reducing alternatives to this rule has not been prepared. Instead, the agency has prepared a more concise document termed a regulatory evaluation that analyzes only this rule without identifying alternatives. In addition to a summary of the regulatory evaluation, this section also contains a Regulatory Flexibility Determination required by the Regulatory Flexibility Act (Pub. L. 96–354) and an International Trade Impact Assessment. If more detailed economic information is desired, the reader may examine the regulatory evaluation contained in the docket.

Economic Evaluation

This analysis examines §§ 27.2 and 91.205 as if they were a single amendment affecting normal category rotorcraft manufacturers and operators and §§ 29.2 and 91.205 as if they were a single amendment affecting transport category rotorcraft manufacturers and operators. Normally, each amendment would be considered separately and a distinct economic impact analysis would accompany each one. In this instance, however, each group of amendments supports what is essentially a single change. Shoulder harnesses must be installed and available in all seats of all normal or transport category rotorcraft manufactured after September 16, 1991, and, thereafter, operated in the United States. Costs and benefits were analyzed separately because they were expected to differ.

Costs and benefits associated with the final rule were calculated on a per-seat basis in the analysis. The advantage of this approach is that it eliminates dependence on forecasts of the future size and activity of the helicopter fleet, which, in turn, depends on future economic activity. Thus, a positive net benefit per seat indicates a positive net benefit to society for this rule.

At the time the initial regulatory evaluation was prepared, some manufacturers equipped many of their part 27 rotorcraft seats with shoulder harnesses as standard equipment, which reduces the overall costs and benefits of the final rule. Using a per-seat cost/benefit analysis removes the necessity of reducing total costs and benefits by the estimated number of seats that would have harnesses even without the rule. Further, a positive net benefit per seat justifies the rule because: (1) Manufacturers may not install harnesses that are otherwise standard or optional equipment if the customer so requests; and (2) Manufacturers would be free to change their company policy in the future and no longer provide harnesses as standard equipment.

The final rule requiring newly manufactured rotorcraft to have shoulder harnesses in all seats reduces the number and severity of fatal and nonfatal injuries suffered in rotorcraft accidents. The benefit to be derived by society as a result of this rule is, therefore, the value of those expected injury reductions. The estimated benefits accruing from each seat manufactured pursuant to this final rule are based on accident rates, injury rates and the harness-related reductions in those rates, and benefits per accident over the life of the seat. These factors and associated results are discussed in the following sections. The data used in this analysis are based upon the Initial Regulatory Evaluation, Initial Regulatory Flexibility Determination, and International Trade Impact Assessment, which are contained in the docket, and upon computer printouts of more recent (1986–1989) rotorcraft accident information. Commenters provided little new or additional data on the proposed rule. Moreover, even though there has been a decline in rotorcraft usage in recent years, the benefits were calculated on a per-seat basis. Therefore, this decline would not have an impact on the final outcome. To provide the public and government officials with a bench mark comparison of the expected safety benefits of a rulemaking action over an extended period of time with estimated costs in dollars, the FAA currently uses a value of $1.5 million to statistically represent a human fatality avoided (in accordance with guidelines issued by the Office of the Secretary of Transportation, dated June 22, 1990). The cost of a serious injury is estimated to be $640,000, and the cost of a minor injury is estimated to be $2,300. On the basis of these cost estimates per type of casualty and using NTSB accident injury data from 1986 to 1989, the FAA estimates that the economic benefit to society of the harness-related injury reductions over the life cycle of a seat manufactured pursuant to this rule will be $1,150 per seat for part 27 rotorcraft and $1,240 per seat for part 29 rotorcraft. These estimates are lower than those presented in the initial regulatory evaluation.

The amendment requiring rotorcraft to be equipped and operated with harnesses for each occupant will have a cost impact on manufacturers and operators. The manufacturing and operating costs were summed and converted into expected lifetime costs per seat to get an estimate of cost impacts that could be compared with expected lifetime benefits per seat. The annual weight penalty and the replacement cost were discounted to the present, and both were calculated to account for the possibility that a rotorcraft might be involved in a destructive accident during its life cycle. Compliance with the final rule will impose life cycle costs of about $140 per seat for operators of part 27 rotorcraft and $350 per seat for operators of part 29 rotorcraft.

Based upon the costs and benefits discussed earlier, the expected benefits, net of costs, over the lifetime of a seat is $1,010 for each part 27 seat manufactured pursuant to this rule and $890 for each part 29 seat. Thus, given the potential economic benefits of lives saved and injuries prevented by using shoulder harnesses, the FAA finds that this rule is cost beneficial.

International Trade Impact Assessment

The rule changes will have little or no impact on trade for both U.S. firms doing business in foreign countries and foreign firms doing business in the United States. In the U.S. market, foreign manufacturers will have the option of producing helicopters that satisfy the new standards and, therefore, will not be at a competitive disadvantage with U.S. manufacturers. Because of the large U.S. market, foreign manufacturers are likely to certificate their rotorcraft to

U.S. standards, which will limit any competitive advantage U.S. manufacturers might gain in foreign markets. Furthermore, it is expected that added costs will be passed on to customers in both domestic and foreign markets.

Regulatory Flexibility Determination

The FAA has determined that under the criteria of the Regulatory Flexibility Act of 1980 and of the FAA small entity size criteria specified in FAA Order 2100.14A, the amendments to parts 21, 27, 29, and 91 will not have a significant economic impact on a substantial number of small entities. The final rule will directly affect two types of small entities: (1) Small rotorcraft manufacturers, and (2) small rotorcraft operators. Each entity is discussed separately.

A. Small Rotorcraft Manufacturers

According to FAA Order 2100.14A, the definition of a small aircraft and aircraft parts manufacturer is one with 75 or fewer employees. There is only one rotorcraft manufacturer (out of 10) in the United States that meets this definition. FAA Order 2100.14A defines a substantial number of small entities as more than one-third of the group but not fewer than 11. With only one small manufacturer in the United States, there is not a significant economic impact on a substantial number of small entities.

B. Small Rotorcraft Operators

The small operators affected by the final rule are commercial operators that are regulated under parts 91, 133, 135, and 137. The size standards criteria in FAA Order 2100.14A classify operators of aircraft for hire as small if they own, but not necessarily operate, nine or fewer aircraft. Estimates of the number of small operators in the United States and the average number of rotorcraft owned by small U.S. operators can be made based on membership data from the Helicopter Association International.

It is assumed for the purpose of this analysis that all small commercial operators in the United States will be affected by this final rule. This represents a worst-case scenario, since many part 27 helicopters are currently equipped with shoulder harnesses at all crew and passenger seats. The World Aviation Directory, Winter 1989, identified 214 firms as either helicopter scheduled air services or helicopter nonscheduled and specialty air services in the United States. At least 151 firms possessed 9 or fewer aircraft. Of the 32 firms who did not identify the number of aircraft that they possessed, it is estimated that 27 of them (84 percent) also possess 9 or fewer aircraft.

FAA Order 2100.14A defines cost thresholds for significant economic impacts for various entity types. The threshold for "operators of aircraft for hire—unscheduled" was $3,300 per year in December 1983 dollars or about $4,100 in second quarter 1990 dollars. The total annualized lifetime cost of complying with the final rule is estimated at about $75 per rotorcraft for operators of part 27 rotorcraft and $450 per rotorcraft with 12 seats ($1,670 per rotorcraft with 45 seats) for operators of part 29 rotorcraft.

The final rule would affect only newly manufactured rotorcraft. If, under a worst-case scenario, an operator of a part 27 rotorcraft purchased nine new rotorcraft manufactured under the final rule over a 10-year period, the total annualized cost due to the rule would be $675, which is less than the $4,100 threshold. A small commercial operator would exceed the annual cost threshold only if the operator replaced at least 9 part 29 rotorcraft with 12 seats (or 3 part 29 rotorcraft with 45 seats). This is very unlikely. Furthermore, even if this did occur among all operators with 8 or 9 part 29 rotorcraft with more than 12 seats, it would represent only 15 commercial operators or 8.4 percent of the 178 commercial operators. The rule, therefore, does not impact more than one-third of affected small entities. Thus, even in the worst case, the final rule would not substantially impact a significant number of small entities.

Federalism Implications

The regulations adopted 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 final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For these reasons, and based on the findings in the Regulatory Flexibility Determination and the International Trade Impact Assessment, the FAA has determined that this regulation is not major under Executive Order 12291. In addition, the FAA certifies that these amendments do not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. These amendments are considered nonsignificant under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). A regulatory evaluation of the amendments, including a Regulatory Flexibility Determination and an International Trade Impact Assessment, 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 21

Aircraft, Aviation safety, Exports, Imports, Reporting and recordkeeping requirements.

14 CFR Parts 27 and 29

Aircraft, Aviation safety.

14 CFR Part 91

Agriculture, Air traffic control, Aircraft, Airmen, Airports, Aviation safety, Freight, Noise control, Political candidates, Reporting and recordkeeping requirements.

Adoption of the Amendments

Accordingly, parts 21, 27, 29, and 91 of the Federal Aviation Regulations (14 CFR parts 21, 27, 29, and 91) are amended as follows:

PART 21—CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS

1. The authority citation for part 21 continues to read as follows:

Authority: 49 U.S.C. 1344, 1348(c), 1352, 1354(a), 1355, 1421 through 1431, 1502, 1651(b)(2), 42 U.S.C. 1857f–10, 4321 *et seq.*: E.O. 11514; 49 U.S.C. 106(g).

§ 21.17 [Amended]

2. Section 21.17(a) introductory text is amended by adding ", § 27.2, § 29.2," after "§ 25.2".

§ 21.101 [Amended]

3. Section 21.101(a) introductory text is amended by revising "§ 23.2 and § 25.2" to read "§§ 23.2, 25.2, 27.2, 29.2".

PART 27—AIRWORTHINESS STANDARDS: NORMAL CATEGORY ROTORCRAFT

4. 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; 49 U.S.C. 106(g).

5. A new § 27.2 is added to subpart A to read as follows:

§ 27.2 Special retroactive requirements.

For each rotorcraft manufactured after September 16, 1992, each applicant must show that each occupant's seat is

equipped with a safety belt and shoulder harness that meets the requirements of paragraphs (a), (b), and (c) of this section.

(a) Each occupant's seat must have a combined safety belt and shoulder harness with a single-point release. Each pilot's combined safety belt and shoulder harness must allow each pilot, when seated with safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. There must be a means to secure belts and harnesses, when not in use, to prevent interference with the operation of the rotorcraft and with rapid egress in an emergency.

(b) Each occupant must be protected from serious head injury by a safety belt plus a shoulder harness that will prevent the head from contacting any injurious object.

(c) The safety belt and shoulder harness must meet the static and dynamic strength requirements, if applicable, specified by the rotorcraft type certification basis.

(d) For purposes of this section, the date of manufacture is either—

(1) The date the inspection acceptance records, or equivalent, reflect that the rotorcraft is complete and meets the FAA-Approved Type Design Data; or

(2) The date the foreign civil airworthiness authority certifies that the rotorcraft is complete and issues an original standard airworthiness certificate, or equivalent, in that country.

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

6. 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; 49 U.S.C. 106(g).

7. A new § 29.2 is added to subpart A to read as follows:

§ 29.2 Special retroactive requirements.

For each rotorcraft manufactured after September 16, 1992, each applicant must show that each occupant's seat is equipped with a safety belt and shoulder harness that meets the requirements of paragraphs (a), (b), and (c) of this section.

(a) Each occupant's seat must have a combined safety belt and shoulder harness with a single-point release. Each pilot's combined safety belt and shoulder harness must allow each pilot, when seated with safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. There must be a means to secure belts and harnesses, when not in use, to prevent interference with the operation of the rotorcraft and with rapid egress in an emergency.

(b) Each occupant must be protected from serious head injury by a safety belt plus a shoulder harness that will prevent the head from contacting any injurious object.

(c) The safety belt and shoulder harness must meet the static and dynamic strength requirements, if applicable, specified by the rotorcraft type certification basis.

(d) For purposes of this section, the date of manufacture is either—

(1) The date the inspection acceptance records, or equivalent, reflect that the rotorcraft is complete and meets the FAA-Approved Type Design Data; or

(2) The date that the foreign civil airworthiness authority certifies the rotorcraft is complete and issues an original standard airworthiness certificate, or equivalent, in that country.

PART 91—GENERAL OPERATING AND FLIGHT RULES

8. The authority citation for part 91 continues to read as follows:

Authority: 49 U.S.C. 1301(7), 1303, 1344, 1348, 1352 through 1355, 1401, 1421 through 1431, 1471, 1472, 1502, 1510, 1522, and 2121 through 2125; Articles 12, 29, 31, and 32(a) of the Convention on International Civil Aviation (61 Stat. 1180); 42 U.S.C. 4321 et seq.: E.O. 11514: 49 U.S.C. 106(g).

9. Section 91.205 is amended by adding a new paragraph (b)(16) to read as follows:

§ 91.205 Powered civil aircraft with standard category U.S. airworthiness certificates: instrument and equipment requirements.

* * * * *

(b) * * *

(16) For rotorcraft manufactured after September 16, 1992, a shoulder harness for each seat that meets the requirements of § 27.2 or § 29.2 of this chapter in effect on September 16, 1991.

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Issued in Washington, DC, on August 9, 1991.

James B. Busey,

Administrator.

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