[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2013-0159; Directorate Identifier 2012-SW-010-AD;

Amendment 39-18032; AD 2014-23-16]

RIN 2120-AA64

Airworthiness Directives; Robinson Helicopter Company Helicopters

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are superseding Airworthiness Directive (AD) 2011-12-10 for Robinson Helicopter Company (Robinson) Model R22, R22 Alpha, R22 Beta, R22 Mariner, R44, and R44 II helicopters with certain main rotor blades (blade) installed. AD 2011-12-10 required inspecting each blade at the skin-to-spar line for debonding, corrosion, a separation, a gap, or a dent and replacing any damaged blade with an airworthy blade. This new AD also requires a terminating action for those inspection requirements. These actions are intended to detect debonding of the blade skin, which could result in blade failure and subsequent loss of control of the helicopter, and to correct the unsafe condition by replacing the main rotor blades with new blades that do not require the AD inspection.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of July 5, 2011 (76 FR 35330, June 17, 2011); corrected March 5, 2012 (77 FR 12991).

ADDRESSES: For service information identified in this AD, contact Robinson Helicopter Company, 2901 Airport Drive, Torrance, CA 90505; telephone (310) 539-0508; fax (310) 539-5198; or at http://www.robinsonheli.com/servelib.htm. You may review a copy of the referenced service information at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth Texas 76137.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, any incorporated-by-reference service information, the economic evaluation, any comments received, and other information. The street address for the Docket Operations Office (phone: 800-647-5527) is U.S. Department of Transportation, Docket Operations Office, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Fred Guerin, Aviation Safety Engineer, Los Angeles Aircraft Certification Office, Transport Airplane Directorate,

FAA, 3960 Paramount Blvd., Lakewood, CA 90712; telephone (562) 627-5232; email fred.guerin@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

On February 25, 2013, at 78 FR 12648, the Federal Register published our notice of proposed rulemaking (NPRM), which proposed to amend 14 CFR part 39 to supersede AD 2011-12-10, Amendment 39-16717 (76 FR 35330, June 17, 2011), corrected March 5, 2012 (77 FR 12991), that applied to Robinson Model R22, R22 Alpha, R22 Beta, and R22 Mariner helicopters with blade, part number (P/N) A016-4; and Model R44 and R44 II helicopters with blade, P/N C016-2 or C-016-5, installed. AD 2011-12-10 required a pilot check of the blade skin-to-spar joint area for any bare metal before the first flight of each day. AD 2011-12-10 also required repetitively inspecting each blade for corrosion, separation, a gap, or a dent, refinishing any bare metal before further flight, and replacing any damaged blade with an airworthy blade. AD 2011-12-10 was prompted by a fatal accident due to blade delamination.

At the time we issued AD 2011-12-10, Robinson had developed replacement blades on the R22 and R44 model helicopters. AD 2011-12-10 was issued as a Final rule; request for comment; however, the amount of time permitted to replace the blades required allowing the public an opportunity to comment. Thus, the NPRM proposed to retain the pilot check, recurring inspection, and blade refinishing requirements of AD 2011-12-10. An owner/operator (pilot) may perform the visual check required by paragraph (f)(1) of this AD and must enter compliance with that paragraph into the helicopter maintenance records in accordance with 14 CFR §§ 43.9(a)(1) through (4) and

91.417(a)(2)(v). A pilot may perform this check because it involves only looking at a visible area of the blades and can be performed equally well by a pilot or a mechanic. This check is an exception to our standard maintenance regulations. The NPRM also proposed to add a part-numbered blade to its applicability for R22 model helicopters. Lastly, the NPRM proposed to require, within five years of the effective date, replacing both main rotor blades with the new part-numbered aluminum blades, which would constitute terminating action of the recurring inspection requirements. These actions are intended to detect and prevent debonding of the blade skin, which could result in blade failure and subsequent loss of control of the helicopter.

Comments

After our NPRM (78 FR 12648, February 25, 2013) was published, we received comments from 15 commenters and have given due consideration to each one. We have identified five unique issues and addressed those issues as follows.

Requests

Ten operators requested that we withdraw the NPRM and allow continued repetitive inspections of the blades for all affected models, as there is insufficient data justifying the termination of the requirement for repetitive inspections and for replacing the main rotor blades with new blades that do not require the AD inspection. One commenter noted that there have been no blade failures since the procedures of AD 2011-12-10 have been implemented, and therefore the NPRM increases the financial burden to an operator without increasing safety. Another commenter requested that more data be obtained regarding the effect of the operating environment and the inspection accordingly modified. Two commenters stated that a salt air environment caused the debonding due to

corrosion. Some commenters state that inspections and routine maintenance, if done correctly, will ensure continued operational safety.

We do not agree. Blade debonding continues to occur in service. The cause of the debonding was determined to be erosion on unpainted blade tip bond lines which allows the bond to weaken and the skin to pull up. The erosion is mechanical and occurs in any environment regardless of salt or moisture in the air. This unsafe condition is sufficient to mandate inspections due to the catastrophic consequences if the blade becomes delaminated. However, airworthiness cannot be assured long-term by reliance on continued repetitive inspections. Although there have been no fatalities since we issued AD 2011-12-10, Robinson continues to report instances of blade delamination found during maintenance checks. Because blades continue to have debond issues, and as using a safety-by-inspection approach for a critical component has been shown to have an inherent amount of risk, it is in the interest of safety to reduce the retirement of the blades from 12 years from the blade manufacturing date to an earlier date.

Five operators requested that we remove the requirement for replacing the blades for the R44 Astro models, because these models are not equipped with hydraulic assisted controls and the new blades cannot be installed on these models unless the helicopter is converted to hydraulic assisted controls, a costly conversion which is not necessary for safe flight. These commenters further stated that the conversion is not only an additional expense but also can only be performed at the Robinson factory. One commenter believed the new blades are compatible with the non-hydraulic airframe and requested we require that Robinson test the new blades on the non-hydraulic R44 Astro airframe, so that the new blades can be installed on the R44 Astro without also having to convert the

helicopter. The commenters also stated that Robinson then reserves the right to upgrade any component on the helicopter to their latest revision even though there is no AD or SB stating the Robinson required change, and this Robinson requirement results in additional cost increase. One commenter requested that we justify this requirement for the R44 Astro helicopters by identifying the number of reports of blade delamination on R44 Astros and explain the safety improvement resulting from converting a helicopter to hydraulic assisted controls. Finally, the commenters also stated that requiring replacement of the blades (and thus, conversion) for R44 Astro helicopters significantly reduces the resale value of these helicopters.

We do not agree. The R44 Astro is subject to the same unsafe condition as the other R22 and R44 helicopter models. The purpose of this AD is not to require converting a helicopter to hydraulic assisted controls; the purpose is to correct this unsafe condition on the blades. Robinson's decision whether to test the new blades with the non-hydraulic R44 Astro helicopter is a business decision, and the FAA does not have the authority to mandate a different decision. Similarly, Robinson's decision to discontinue blades designed for the non-hydraulic equipped helicopters is a business decision that the FAA does not have the authority to change. Because the blades for the non-hydraulic equipped R44 Astro helicopters are calendar life limited to 12 years and will no longer be produced, and as the manufacturer has not pursued FAA approval for installation of the new blades on the non-hydraulic R44 Astro, the owners of the Astro helicopter will need to install hydraulic assisted flight controls after 12 years regardless of the AD requirements. The FAA acknowledges that the expense and downtime to accomplish the blade replacement is greater for the R44 helicopters that are not equipped with hydraulic

assisted controls. However, this greater cost due to an absence of hydraulic controls, while unfortunate, does not change the blade safety issue or the need to require replacement of the blades prior to their retirement life.

Four operators stated that the FAA has not considered the cost of this AD on operators and requested that Robinson be responsible for the cost of the new blades. One commenter also requested that Robinson be responsible for the cost of converting the R44 Astro to hydraulic assisted flight controls, as this will be required for that model when the new blades are installed.

We do not agree. While we acknowledge that the costs associated with the actions of this AD are not minimal, we have determined that these costs are reasonable given the unsafe condition. As far as request for Robinson to bear these costs, the FAA does not have the authority to require a manufacturer to bear the cost of a repair.

One commenter requested that we require blade replacement at the 2,200 hour overhaul or 12 years instead of the 5-year compliance time. The commenter stated that as Robinson started the production of new blades about 3 years ago, the 5-year replacement period would require some owners to replace the blades long before reaching the 12-year inspection, and this financial cost was not taken into account with the proposed rule.

We do not agree. We determined a replacement period of five years from the date of the AD by using a quantitative and qualitative risk assessment methodology. The risk of blade skin debonding results in a loss of control of the helicopter and is beyond acceptable risk guidelines when allowing the blades to continue in service indefinitely. Although the risk assessment indicates that immediate action is required to correct the unsafe condition, this risk is partially mitigated by the improved inspection techniques,

making it acceptable to allow a five year period of time for blades to be replaced. The added cost to retire the blades has been anticipated in the financial burden justification of this AD. The FAA acknowledges that in some situations the cost to the operator may be in excess of the cost of the replacement blades, but we have determined that the costs associated with the actions of this AD are reasonable given the safety issue.

Lastly, one commenter did not make a request but stated that bare metal can be seen on areas of the helicopter and that the helicopter manufacturer provides poor corrosion protection on the helicopter. The commenter explained that metal-to-metal contact causes the corrosion that occurs on the blades.

We disagree. Metal-to-metal contact may be a mechanism that is causing the corrosion in the rotor blade tip cap to skin interface, but it has not been shown to be a mechanism for skin debonding in the area of the blade that has been found in the fleet. Skin debonding is the unsafe condition the actions in this AD are correcting.

FAA's Determination

We have reviewed the relevant information, considered the comments received, and determined that an unsafe condition exists and is likely to exist or develop on other products of these same type designs and that air safety and the public interest require adopting the AD requirements as proposed, except we are allowing compliance with the revised service information as an optional action. We have also made clarifications in the economic analysis to reflect the correct cost of required parts and labor for R-44 helicopters without hydraulically boosted flight controls installed. The total estimated cost for these model helicopters has not changed. These changes are consistent with the

intent of the proposals in the NPRM (78 FR 12648, February 25, 2013) and will not increase the economic burden on any operator nor increase the scope of the AD.

Related Service Information

We have reviewed the following Robinson service information:

- Letter titled "Additional Information Regarding Main Rotor Blade Skin Debonding," dated May 25, 2007, discussing blade skin debonding;
- Rotorcraft Flight Manual (RFM) changes to the Normal Procedures Section 4 and Systems Description Section 7, revised April 20, 2007, for each applicable model helicopter containing a "caution" about skin-to-spar bond line erosion;
- One Service Letter with two different Nos.: R22 SL-56B and R44 SL-32B, both revised April 30, 2010, specifying proper inspection and protection (refinishing) of bonded areas; and
- Service Bulletins SB-103 for the Model R22 and SB-72 for the Model R44, both dated April 30, 2010, and SB-103A and SB-72A, both dated July 19, 2012, specifying proper inspection and protection (refinishing) of bonded areas for certain affected blades.
- R44 Service Letter SL-37, dated June 18, 2010, specifying the required modifications for a carbureted R-44 to install P/N C016-7 blades.

Costs of Compliance

We estimate that this AD affects 1,290 Model R22 helicopters and 1,353 Model R44 helicopters, for a total of 2,643 helicopters of U.S. Registry. At an average labor rate of $85 per hour, we estimate that operators will incur the following costs in order to comply with this AD:

- Time to perform the before flight check each day is negligible.
- Inspecting both blades will require about three work hours, for a total cost per helicopter of $255 and a total cost to the U.S. operator fleet of $673,965.
- Replacing both blades on a Model R22 helicopter will require about 20 work hours, and required parts will cost $29,808, for a total cost per helicopter of $31,508 and a total cost to the U.S. R22 operator fleet of $40,645,320 over a 5-year period.
- Replacing both blades on a Model R44 helicopter with hydraulically boosted flight controls installed (approximately 1,053 helicopters) will require about 20 work hours, and required parts will cost $43,783, for a total cost per helicopter of $45,483 and a total cost to the U.S. R44 operator fleet of $47,893,599 over a 5-year period.
- Replacing both blades on a Model R44 helicopter without hydraulically boosted flight controls installed (approximately 300 helicopters) will require modifying the aircraft with hydraulic flight controls, and adding the P/N C016-7 blades and the required airframe provisions at a cost of 100 work-hours for a total labor cost of $8,500. Parts will cost $103,747 for a total cost per helicopters of $112,247, and a cost to U.S. operators of $33,674,100 over 5 years.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect 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.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979);

(3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction; and

(4) 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.

We prepared an economic evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

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

§ 39.13 [Amended]

2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2011-12-10, Amendment 39-16717 (76 FR 35330, June 17, 2011); corrected March 5, 2012 (77 FR 12991), and adding the following new AD:

2014-23-16 **Robinson Helicopter Company:** Amendment 39-18032; Docket No. FAA-2013-0159; Directorate Identifier 2012-SW-010-AD.

(a) Applicability

This AD applies to Model R22, R22 Alpha, R22 Beta, and R22 Mariner helicopters with main rotor blade (blade), part number (P/N) A016-2 or A016-4; and Model R44 and R44 II helicopters with blade, P/N C016-2 or C-016-5, certificated in any category.

(b) Unsafe Condition

This AD defines the unsafe condition as blade skin debonding, which could result in blade failure and subsequent loss of control of the helicopter.

(c) Affected ADs

This AD supersedes AD 2011-12-10, Amendment 39-16717 (76 FR 35330, June 17, 2011); corrected March 5, 2012 (77 FR 12991).

(d) Effective Date

This AD becomes effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(e) Compliance

You are responsible for performing each action required by this AD within the specified compliance time unless it has already been accomplished prior to that time.

(f) Required Actions

(1) Before the first flight of each day, visually check for any exposed (bare metal) skin-to-spar joint area on the lower surface of each blade. The actions required by this paragraph may be performed by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD in accordance with 14 CFR § 43.9(a)(1) through (4) and 14 CFR § 91.417(a)(2)(v). The record must be maintained as required by 14 CFR §§ 91.417, 121.380, or 135.439.

(2) If there is any bare metal in the area of the skin-to-spar bond line, before further flight, inspect the blade by following the requirements of paragraph (f)(3) of this AD.

(3) Within 10 hours time-in-service (TIS), and at intervals not to exceed 100 hours TIS or at each annual inspection, whichever occurs first, inspect each blade for corrosion, separation, a gap, or a dent by following the Compliance Procedure, paragraphs 1 through 6 and 8, of Robinson R22 Service Bulletin SB-103, dated April 30,

2010 (SB103), or Robinson Service Bulletin SB-72, dated April 30, 2010 (SB72), as appropriate for your model helicopter. Although the Robinson service information limits the magnification to 10X, a higher magnification is acceptable for this inspection. Also, an appropriate tap test tool which provides similar performance, weight, and consistency of tone may be substituted for the "1965 or later United States Quarter-dollar coin," which is specified in the Compliance Procedure, paragraph 2, of SB72 and SB103.

(4) Before further flight, refinish any exposed area of a blade by following the Compliance Procedure, paragraphs 2 through 6, of Robinson R22 Service Letter SL-56B or R44 Service Letter SL-32B, both dated April 30, 2010, as appropriate for your model helicopter.

(5) Before further flight, replace any unairworthy blade with an airworthy blade.

(6) Within 5 years of the effective date of this AD:

(i) For Model R22 series helicopters, replace blade P/N A016-2 or A016-4 with a blade, P/N A016-6.

(ii) For Model R44 series helicopters fitted with hydraulically boosted main rotor flight controls, replace blade P/N C016-2 or C016-5 with a blade, P/N C016-7.

(iii) For Model R44 series helicopters without hydraulically boosted main rotor flight controls, replace blade P/N C016-2 or C016-5 with a blade, P/N C016-7. Prior to installing a blade P/N C016-7, verify the helicopter has been modified as required by Robinson R44 Service Letter SL-37, dated June 18, 2010, Compliance Procedures, paragraphs 1. through 10.

(iv) Installing blades, P/N A016-6 or P/N C016-7, is terminating action for the inspection requirements of paragraphs (f)(1) through (f)(4) of this AD.

(7) As an option for complying with paragraph (f)(3) of this AD, you may perform a blade inspection by following the corresponding provisions of SB-103A or SB-72A, both dated July 19, 2012, as appropriate for your model helicopter.

(g) Special Flight Permits

Special flight permits will not be issued.

(h) Alternative Methods of Compliance (AMOCs)

(1**)** The Manager, Los Angeles Aircraft Certification Office, FAA, may approve AMOCs for this AD. Send your proposal to: Fred Guerin, Aviation Safety Engineer, Los Angeles Aircraft Certification Office, Transport Airplane Directorate, FAA, 3960 Paramount Blvd., Lakewood, CA 90712; telephone (562) 627-5232; email fred.guerin@faa.gov.

(2) For operations conducted under a 14 CFR part 119 operating certificate or under 14 CFR part 91, subpart K, we suggest that you notify your principal inspector, or lacking a principal inspector, the manager of the local flight standards district office or certificate holding district office before operating any aircraft complying with this AD through an AMOC.

(3) AMOCs approved for AD 2011-12-10 (76 FR 35330, June 17, 2011); corrected March 5, 2012 (77 FR 12991), are approved as AMOCs for the corresponding requirements in paragraph (f) of this AD.

(i) Additional Information

The Robinson letter titled “Additional Information Regarding Main Rotor Blade Skin Debonding,” dated May 25, 2007, which is not incorporated by reference, contains additional information about the subject of this AD. For service information identified in

this AD, contact Robinson Helicopter Company, 2901 Airport Drive, Torrance, CA 90505; telephone (310) 539-0508; fax (310) 539-5198; or at http://www.robinsonheli.com/servelib.htm. You may review a copy of this information at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137.

(j) Subject

Joint Aircraft Service Component (JASC) Code: 6210: Main Rotor Blades.

(k) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) Robinson R44 Service Letter SL-37, dated June 18, 2010.

(ii) Reserved.

(4) The following service information was previously approved for IBR on July 5, 2011 (76 FR 35330, June 17, 2011); corrected March 5, 2012 (77 FR 12991).

(i) Robinson R22 Service Bulletin SB-103, dated April 30, 2010.

(ii) Robinson R44 Service Bulletin SB-72, dated April 30, 2010.

(iii) Robinson R22 Service Letter SL-56B, dated April 30, 2010.

(iv) Robinson R44 Service Letter SL-32B, dated April 30, 2010.

(5) For Robinson service information identified in this AD, contact Robinson Helicopter Company, 2901 Airport Drive, Torrance, CA 90505; telephone (310) 539-0508; fax (310) 539-5198; or at http://www.robinsonheli.com/servelib.htm.

(6) You may view this service information at FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas 76137. For information on the availability of this material at the FAA, call (817) 222-5110.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to: http://www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued in Fort Worth, Texas, on November 4, 2014.

Lance T. Gant,

Acting Directorate Manager, Rotorcraft Directorate,
Aircraft Certification Service.

[FR Doc. 2014-28478 Filed 12/04/2014 at 8:45 am; Publication Date: 12/05/2014]