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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-23085; Directorate Identifier 2005-SW-25-AD; Amendment 39-14385; AD 2005-24-05]

RIN 2120-AA64

Airworthiness Directives; Boeing Vertol Model 107-II Helicopters

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment adopts a new airworthiness directive (AD) for Boeing Vertol (Boeing) Model 107-II helicopters. This action requires a visual and magnetic particle inspection of the quill shaft. This amendment is prompted by the discovery of cracks in a quill shaft during a routine inspection. The actions specified in this AD are intended to detect a fatigue crack in a quill shaft and prevent separation of the quill shaft between the aft transmission and the mix box assembly, loss of rotor synchronization, and subsequent loss of control of the helicopter.

DATES: Effective December 8, 2005.

Comments for inclusion in the Rules Docket must be received on or before January 23, 2006.

ADDRESSES: Use one of the following addresses to submit comments on this AD:

- DOT Docket Web site: Go to *http://dms.dot.gov* and follow the instructions for sending your comments electronically;
- Government-wide rulemaking Web site: Go to *http://www.regulations.gov* and follow the instructions for sending your comments electronically;
- Mail: Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590;
- Fax: (202) 493-2251; or
- Hand Delivery: Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

You may get the service information identified in this AD from The Boeing Company, c/o Service Engineering, MC P01-10, P.O. Box 16858, Philadelphia, PA 19142-3227.

Examining the Docket

You may examine the docket that contains the AD, any comments, and other information on the Internet at *http://dms.dot.gov*, or in person at the Docket Management System (DMS) Docket Offices between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5227) is located on the plaza level of the Department of Transportation Nassif Building at the street address stated in the ADDRESSES section. Comments will be available in the AD docket shortly after the DMS receives them.

FOR FURTHER INFORMATION CONTACT: George Duckett, Aviation Safety Engineer, FAA, New York Aircraft Certification Office, Airframe and Propulsion Branch, 1600 Stewart Ave., suite 410, Westbury, New York 11590, telephone (516) 228-7325, fax (516) 794-5531.

SUPPLEMENTARY INFORMATION: This amendment adopts a new AD for Boeing Model 107-II helicopters. This action requires a visual and magnetic particle inspection of the quill shaft. This amendment is prompted by the discovery of cracks in a quill shaft during a routine 700-hour TIS clutch replacement in which a magnetic particle inspection of the quill shaft was done. Investigation shows that cracking on the ends of the spline teeth of the quill shaft, around the pinhole, occurs due to a wear step in the mating pinion gear splines. These cracked spline teeth can provide stress concentrations that may lead to fatigue cracks. This condition, if not corrected, could result in separation of the quill shaft between the aft transmission and the mix box assembly, loss of rotor synchronization, and subsequent loss of control of the helicopter.

We have reviewed Boeing Service Bulletin No. 107-63-1005, Revision 1, dated April 27, 2005, which describes procedures for inspections of quill shafts, part number (P/N) 107D2067, all dash numbers. The service bulletin also specifies rejecting any quill shaft with chipped or cracked teeth or any quill shaft with a crack and, although not required by this AD, specifies measuring and recording wear in the spline of the mating pinion gear, P/N 107D2215. Also, Boeing recommends replacing unairworthy quill shafts with airworthy quill shafts, P/N 107D2067-5. These part-numbered quill shafts have been improved with a shot-peen process. However, in this AD, we are only requiring that you replace any unairworthy quill shaft with an airworthy quill shaft with any approved P/N.

This AD is an interim action which covers initial inspections of the quill shaft. We plan to follow this AD with a superseding Notice of Proposed Rulemaking (NPRM) containing longer term requirements. The NPRM will propose adding the pinion gear wear measurements specified in the service bulletin and will propose adding recurring inspections of the quill shaft. Also, because we still have not determined the cause of the wear steps in the mating pinion gear splines, we may consider further rulemaking when the cause is ultimately determined.

This unsafe condition is likely to exist or develop on other helicopters of the same type design. Therefore, this AD is being issued to detect a fatigue crack in a quill shaft and prevent separation of the quill shaft between the aft transmission and the mix box assembly, loss of rotor synchronization, and subsequent loss of control of the helicopter. This AD requires the following for a helicopter with a quill shaft, P/N 107D2067, and a pinion gear, P/N 107D2215, installed:

- Remove the aft transmission assembly, separate the mix box assembly from the aft transmission, and remove the quill shaft from the pinion gear assembly;
- Visually inspect the external spline of the quill shaft for a chipped or cracked tooth around the pinhole; and
- Magnetic particle inspect the quill shaft for a crack.
- Replace any quill shaft that has a crack or a chipped or cracked tooth with an airworthy quill shaft before further flight.

If the pinion gear has 700 or more hours TIS, comply within 50 hours TIS, unless accomplished within the previous 350 hours TIS. If the pinion gear has less than 700 hours TIS, comply on or before reaching 750 hours TIS.

The short compliance time involved is required because these high-usage helicopters can quickly develop pinion gear wear that could lead to cracks in the quill shaft and adversely affect the structural integrity and controllability of the helicopter. Therefore, the actions described previously are required within 50 hours TIS, a short time period of about 2 weeks based on the high usage rate of these model helicopters, and this AD must be issued immediately.

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

We estimate that this AD will affect 7 helicopters. We estimate that each helicopter inspection will take about 17 work hours at an average labor rate of $65 per work hour. Required parts will cost $2,500 for each quill shaft. Based on these figures, we estimate the total cost impact of the AD on U.S. operators to be $10,235, assuming one quill shaft is replaced on the fleet.

Comments Invited

This AD is a final rule that involves requirements that affect flight safety and was not preceded by notice and an opportunity for public comment; however, we invite you to submit any written data, views, or arguments regarding this AD. Send your comments to an address listed under ADDRESSES. Include "Docket No. FAA-2005-23085; Directorate Identifier 2005-SW-25-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the AD. We will consider all comments received by the closing date and may amend the AD in light of those comments.

We will post all comments we receive, without change, to *http://dms.dot.gov*, including any personal information you provide. We will also post a report summarizing each substantive verbal contact with FAA personnel concerning this AD. Using the search function of our docket web site, you can find and read the comments to any of our dockets, including the name of the individual who sent the comment. You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78), or you may visit *http://dms.dot.gov*.

Regulatory Findings

We have determined that 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 the regulation:

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

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

3. 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. See the DMS to examine the economic evaluation.

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.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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. Section 39.13 is amended by adding a new airworthiness directive to read as follows:

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
Federal Aviation
Administration

We post ADs on the internet at www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2005-24-05 Boeing Vertol (Boeing): Amendment 39-14385. Docket No. FAA-2005-23085; Directorate Identifier 2005-SW-25-AD.

Applicability

Model 107-II helicopters, all serial numbers, with a quill shaft, part number (P/N) 107D2067, all dash numbers, and a spiral bevel pinion gear (pinion gear), P/N 107D2215, installed, certificated in any category.

Compliance

Required as indicated.

To detect a fatigue crack in a quill shaft to prevent separation of the quill shaft between the aft transmission and the mix box assembly, loss of rotor synchronization, and subsequent loss of control of the helicopter, accomplish the following:

(a) For a helicopter with a pinion gear installed with the following hours time-in-service (TIS):

Pinion gear hours TIS	Compliance time
700 or more hours TIS	Within 50 hours TIS, unless accomplished within the previous 350 hours TIS.
Less than 700 hours TIS	On or before reaching 750 hours TIS.

(1) Remove the aft transmission assembly, separate the mix box assembly from the aft transmission, and remove the quill shaft from the pinion gear assembly;

(2) Visually inspect the external spline of the quill shaft for a chipped or cracked tooth around the pinhole; and

(3) Magnetic particle inspect the quill shaft for a crack.

(b) Before further flight, replace any quill shaft that has a crack or a chipped or cracked tooth with an airworthy quill shaft.

Note 1: Boeing Service Bulletin No. 107-63-1005, Revision 1, dated April 27, 2005, pertains to the subject of this AD.

Note 2: Replacement quill shafts manufactured by Kawasaki Heavy Industries (KHI) for use on their Model KV107-II helicopters must be approved by the geographic Aircraft Certification Office (ACO) on a case-by-case basis for installation on a Boeing Model 107-II helicopter.

(c) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Contact the Manager, New York ACO, Engine and Propeller Directorate, FAA, for information about previously approved alternative methods of compliance.

(d) Special flight permits will not be issued.

(e) This amendment becomes effective on December 8, 2005.

Issued in Fort Worth, Texas, on November 16, 2005.
Scott A. Horn,
Acting Manager, Rotorcraft Directorate, Aircraft Certification Service.
[FR Doc. 05-23156 Filed 11-22-05; 8:45 am]
BILLING CODE 4910-13-P