FAA
Aviation Safety

EMERGENCY AIRWORTHINESS DIRECTIVE

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DATE: November 27, 2015
AD #: 2015-24-51

This Emergency Airworthiness Directive (Emergency AD) 2015-24-51 is being sent to owners and operators of Airbus Helicopters Model EC120B helicopters. This Emergency AD applies only to those helicopters that have an Air Comm Corporation (Air Comm) air conditioning kit installed in accordance with Supplemental Type Certificate No. SR00491DE.

Background

This Emergency AD was prompted by a report that the operator of an Airbus Helicopters Model EC120B heard an abnormal noise during flight that gradually became more pronounced resulting in a precautionary landing. While applying power to land, the helicopter yawed left. Application of the right pedal did not correct the rotation requiring the pilot to perform a hovering auto rotation.

A preliminary investigation showed that the mating splines of the air conditioner system's pulley and the tail rotor output pinion had worn away allowing the pulley to rotate freely on the output pinion. Failure of the drive pulley and tail rotor output pinion during flight may result in the loss of tail rotor drive and subsequent loss of directional control.

After this incident, Air Comm issued Service Bulletin SB-EC120-111815, Revision A, dated November 20, 2015, prompting an inspection of another Model EC120B helicopter that also showed severe wear in the mating splines of the air conditioner system's pulley and the tail rotor output pinion. The wear was not detected until after the tail rotor drive was disassembled to allow the removal of the Air Comm pulley drive. No play was detected between the air conditioner system's pulley and the tail rotor output pinion prior to disassembly and the pilot had not reported any concerns.

The root cause of this condition has not been determined and the investigation is on-going.

FAA's Determination

We are issuing this Emergency AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of this same design.

Related Service Information

We reviewed Air Comm Service Bulletin SB-EC120-111815, Revision A, dated November 20, 2015. Air Comm reports that the air conditioning compressor drive pulley, mounted to the Thomas coupling just aft of the main rotor brake caliper, is an integral piece of the power transmission components for the tail rotor. A field report indicated that the spline joint on the compressor drive pulley can wear beyond its capability to ensure power transmission to the tail rotor shaft. Given that the installation is flight critical, Air Comm specifies an inspection of the pulley-

ouput pinion interface. If excessive play or wear is found, the aircraft must be made inoperable until un-airworthy parts are replaced.

Emergency AD Requirements

This Emergency AD requires, before further flight, and at intervals not to exceed 25 hours time-in-service, partially disassembling the tail rotor drive system to allow for the removal of the air conditioner compressor drive pulley. With the drive system disassembled and the compressor drive pulley in its normal installed position on the tail rotor output pinion shaft, this Emergency AD requires applying clockwise and counter-clockwise, up-and-down, and left-and-right force by hand to the pulley while holding the rotor brake disc stationary. If any movement exists between the pulley and tail rotor output pinion (play), this Emergency AD requires replacing the pulley and tail rotor output pinion before further flight. If no play exists, this Emergency AD requires removing the pulley and visually inspecting the pulley and output pinion splines for wear. If any splines are not straight, contain any inconsistent cross-sections end-to-end, contain any localized material deformation, or any material loss, this Emergency AD requires replacing the pulley and tail rotor output pinion before further flight. Within 10 days after completing the initial inspection, this Emergency AD also requires reporting certain information to the FAA.

Replacing the Air Comm pulley with Airbus output flange, part number C632A2158201, and fully or partially deactivating the air conditioning system (partially deactivating means the evaporator blowers are still operable), constitutes terminating action for this Emergency AD.

Differences Between This Emergency AD and the Service Information

Air Comm specifies recurring inspections after 100 flight hours. If the air conditioning system remains operable (Air Comm drive pulley installed), this Emergency AD requires recurring inspections at intervals not to exceed 25 hours time-in-service. If no play is found between the pulley and the output pinion, Air Comm would allow the parts to be returned to service; whereas this Emergency AD requires that the parts be disassembled and inspected for wear. Air Comm asks in its Inspection Procedure that it be contacted and that information be submitted to the company. This Emergency AD requires the inspection results be reported to the FAA.

Interim Action

We consider this Emergency AD to be an interim action. The inspection report that is required by this Emergency AD will enable us to obtain better insight into the cause of the failure of the drive pulley and the tail rotor output pinion, and help us to develop final action to address this unsafe condition. Once final action has been identified, we might consider further rulemaking.

Costs of Compliance

We estimate that this Emergency AD will affect 2 helicopters of U.S. Registry and that labor costs average $85 a work-hour. Based on these estimates we expect that performing the fit inspection of the pulley on the tail rotor output pinion will take about 6 work-hours for a cost of $510 per helicopter and $1,020 for the U.S. fleet per inspection cycle. Inspecting for wear will take about 0.5 work-hour for a cost of $43 per helicopter. Replacing an Air Comm pulley and tail rotor output pinion will cost $21,611 for parts and 10 additional work-hours for a cost of $22,461per helicopter. The optional terminating action of deactivating the air conditioning system (fully or partially) will take about 0.5 work-hour for a cost of about $43 per helicopter. Installing an output flange and tail rotor output pinion will cost $21,558 for parts and 10 additional work-hours for a cost of $22,408 per helicopter. Reporting the required inspection information will take about 0.5 work-hour for a cost of about $43 per helicopter and $85 for the U.S. fleet.

Paperwork Reduction Act

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. The control number for the collection of information required by this Emergency AD is 2120-0056. The paperwork cost associated with this Emergency AD has been detailed in the Costs of Compliance section of this document and includes time for reviewing instructions, as well as completing and reviewing the collection of information. Therefore, all reporting required by this Emergency AD is mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Ave., SW, Washington, DC 20591; ATTN: Information Collection Clearance Officer, AES-200.

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.

Adoption of the Emergency Airworthiness Directive (AD)

We are issuing this Emergency AD under 49 U.S.C. Sections 106(g), 40113, and 44701 according to the authority delegated to me by the Administrator.

2015-24-51 **Airbus Helicopters:** Directorate Identifier 2015-SW-086-AD.

(a) Applicability

This Emergency AD applies to Airbus Helicopters Model EC120B helicopters with an Air Comm Corporation (Air Comm) air conditioning kit installed in accordance with Supplemental Type Certificate No. SR00491DE.

(b) Unsafe Condition

This Emergency AD defines the unsafe condition as failure of the drive pulley and the tail rotor output pinion, leading to loss of helicopter control.

(c) Effective Date

This Emergency AD is effective upon receipt.

(d) Compliance

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

(e) Required Actions

(1) Before further flight, and at intervals not to exceed 25 hours time-in-service, disassemble the tail rotor drive system to allow for the removal of the air conditioner compressor drive pulley.

(i) With the drive system partially disassembled and the compressor drive pulley in its normal installed position on the tail rotor output pinion shaft, apply clockwise and counter-clockwise, up-and-down, and left-and-right force by hand to the pulley while holding the rotor brake disc stationary. If any movement exists between the pulley and tail rotor output pinion (play), replace the pulley and tail rotor output pinion before further flight.

(ii) If no play exists, remove the pulley and visually inspect the pulley and output pinion splines for wear. If any splines are not straight, contain any inconsistent cross-sections end-to-end, contain any localized material deformation, or any material loss, replace the pulley and tail rotor output pinion before further flight.

Note 1 to paragraph (e)(1)(ii) of this Emergency AD: End-to-end (fore-and-aft) movement witness marks and polishing are acceptable as the coupling is allowed to slip fore and aft on the output pinion per its intended function.

(2) Within 10 days after completing the initial inspection, report the information requested in Appendix 1 to this Emergency AD by mail to the Denver Aircraft Certification Office, FAA, Technical Operations Center, 26805 East 68th Avenue, Room 214, Denver CO 80249, attn. Richard R. Thomas; by fax to (303) 342-1088; or by email to richard.r.thomas@faa.gov.

(3) Replacing the Air Comm pulley with Airbus output flange, part number C632A2158201, and fully or partially deactivating the air conditioning system (partially deactivating means the evaporator blowers are still operable), constitutes terminating action for this Emergency AD.

(f) Special Flight Permits

Special flight permits are prohibited.

(g) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Denver Aircraft Certification Office, FAA, may approve AMOCs for this Emergency AD. Send your proposal to: Richard R. Thomas, Aerospace Engineer, Denver Aircraft Certification Office, FAA, Technical Operations Center, 26805 East 68th Avenue, Room 214, Denver CO 80249; by fax to (303) 342-1088; or by email to email richard.r.thomas@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 Emergency AD through an AMOC.

h) Additional Information

(1) For further information contact: Richard R. Thomas, Aerospace Engineer, Denver Aircraft Certification Office, FAA, Technical Operations Center, 26805 East 68th Avenue, Room 214, Denver CO 80249; telephone (303) 342-1085; email richard.r.thomas@faa.gov.

(2) For a copy of the Air Comm Corporation service information referenced in this Emergency AD, contact Airbus Helicopters, 2701 N. Forum Drive, Grand Prairie, TX 75052;

telephone (972) 641-0000 or (800) 232-0323; fax (972) 641-3775; or at http://www.airbushelicopters.com/techpub; or Air Comm Corporation, 1575 West 124th Avenue, Westminster, CO 80234; telephone (303) 440-4075 (during business hours) or (720) 233-8330 (after hours); email service@aircommcorp.com; or at http://www.aircommcorp.com/contact. A copy of Supplemental Type Certificate No. SR00491DE, reissued on November 24, 2014, may be found on the Internet at rgl.faa.gov by searching for and locating it in the Supplemental Type Certificate database.

(i) Subject

Joint Aircraft Service Component (JASC) Code: 6500, Tail Rotor Drive System.

Issued in Fort Worth, Texas, on November 27, 2015.

Lance T. Gant,

Manager, Rotorcraft Directorate,
Aircraft Certification Service.

Appendix 1 to Emergency AD 2015-24-51

Please report the following to the Denver Aircraft Certification Office, FAA, Technical Operations Center, by mail to 26805 East 68th Avenue, Room 214, Denver CO 80249, attn. Richard R. Thomas; by fax to (303) 342-1088; or by email to richard.r.thomas@faa.gov:

(1) Condition of the splined joint. Document any damage found with photographs.

(2) Flight hours since the air-conditioning kit was installed.

(3) Aircraft serial number.

(4) Pulley serial number (etched on the pulley's face).

(5) Output Pinion serial number from main gearbox, MAIN MODULE hard card.

(6) Primary operating location of the aircraft.

(7) Approximate average percentage of time the air conditioner is used.

(8) Operator and maintenance facility contact information.

(9) If parts are replaced, will air conditioning system remain fully or partially operable?