

EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

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DATE: March 15, 2002

AD #: 2002-06-52

Send to all U.S. owners and operators of Bell Helicopter Textron Canada Model 407 helicopters.

This superseding Emergency Airworthiness Directive (AD) is prompted by several occurrences of failure of an oil cooler blower bearing. Particular tailwind conditions during flight can result in engine exhaust gas ingestion by the oil cooler blower and deterioration of the bearing grease. This condition, if not corrected, could result in bearing failure, loss of tail rotor drive, and a subsequent forced landing.

The FAA issued Final Rule AD 2000-02-12 on February 10, 2000 (65 FR 8032, February 17, 2000), to require inspecting each oil cooler blower bearing for roughness and replacing any rough bearings before further flight. That AD was prompted by reports of failure of the bearing. Since the issuance of that AD, continued bearing failures and identifications of effects of engine exhaust gas ingestion have been reported.

The FAA has reviewed Bell Helicopter Textron Alert Service Bulletin (ASB) Nos. 407-01-44, Revision A, dated October 25, 2001; 407-01-47, dated November 9, 2001; and 407-02-49, dated January 7, 2002. ASB 407-01-44, Revision A, specifies replacing specific oil cooler blower bearings, clarifies and expands the bearing lubrication procedure and schedule, and provides an alternate method of compliance for U.S.-registered Model 407 helicopters. ASB 407-01-47 updates the inspection and lubrication procedures and schedule for specified bearings at all oil cooler blower and tail rotor driveshaft locations. ASB 407-02-49 introduces a new limitation and a new caution to the tailwind operations in the Rotorcraft Flight Manual (RFM) and maintenance actions for exceeding the limitations.

Transport Canada, the airworthiness authority for Canada, notified the FAA that an unsafe condition may exist on this helicopter model. Transport Canada advises that testing indicates premature failure of an oil cooler blower bearing can occur, under certain conditions, due to ingesting exhaust gases into the aft fairing inlet resulting in elevated temperatures. Also, Transport Canada advises that research indicates that over-greasing the bearing can result in elevated bearing temperatures and failure of a bearing. Transport Canada classified the service bulletins as mandatory and issued AD No. CF-2002-18, dated March 4, 2002, to ensure the continued airworthiness of these helicopters.

This helicopter model is manufactured in Canada and is type certificated for operation in the United States under the provisions of 14 CFR 21.29 and the applicable bilateral agreement. Pursuant to the applicable bilateral agreement, Transport Canada has kept the FAA informed of the situation described above. The FAA has examined the findings of Transport Canada, reviewed all available information, and determined that AD action is necessary for products of these type designs that are certificated for operation in the United States.

Since this unsafe condition is likely to exist or develop on other helicopters of this same type design, this AD requires:

- Before further flight, add the tailwind limitation and caution contained in Temporary Revision 9 to the RFM.
- At specified intervals, inspect the oil cooler blower bearings; and if a bearing is rough, a seal is torn, the expelled grease has turned black, or metal particles are visible in the expelled grease, replace the affected bearing before further flight.
- At a specified time-in-service, replace certain bearings.
- At specified intervals, lubricate the bearings.

This rule is issued under 49 U.S.C. Section 44701 pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this emergency airworthiness directive.

2002-06-52 **BELL HELICOPTER TEXTRON CANADA:** Docket No. 2002-SW-08-AD. Supersedes AD 2000-02-12, Docket No. 99-SW-79-AD.

Applicability: Model 407 helicopters, with oil cooler blower bearing, part number (P/N) 406-040-339-ALL, 407-340-339-101 or -103, installed, certificated in any category.

NOTE 1: This AD applies to each helicopter identified in the preceding applicability provision, regardless of whether it has been otherwise modified, altered, or repaired in the area subject to the requirements of this AD. For helicopters that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (f) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent oil cooler blower bearing failure, loss of tail rotor drive, and a subsequent forced landing, accomplish the following:

(a) Before further flight, insert the tailwind limitation and caution, contained in Temporary Revision (TR) 9, dated January 15, 2002, into the Bell Model 407 Rotorcraft Flight Manual (RFM), dated February 9, 1996.

Note 2: TR 9 is attached to Bell Helicopter Textron (BHT) Alert Service Bulletin (ASB) 407-02-49, dated January 7, 2002.

(b) Within 10 hours time-in-service (TIS), inspect the forward and aft oil cooler blower bearings by hand-rotating the driveshaft with the oil cooler driveshaft connected. If a bearing is rough, a seal is torn, the expelled grease has turned black, or metal particles are visible in the expelled grease, replace the affected bearing before further flight.

(c) At intervals not to exceed 25 hours TIS, for oil cooler blower bearings, P/N 406-040-339-ALL and 407-340-339-103:

(1) Inspect the bearings by hand-rotating the driveshaft in accordance with the Accomplishment Instructions, Part I, paragraph 2, of BHT ASB 407-01-47, dated November 9, 2001 (ASB 407-01-47). If a bearing is rough, a seal is torn, the expelled grease has turned black, or metal particles are visible in the expelled grease, replace the affected bearing before further flight.

(2) Lubricate the bearings in accordance with the Accomplishment Instructions, Part II, paragraph 2, of ASB 407-01-47.

(d) For oil cooler blower bearings, P/N 407-340-339-101:

(1) At intervals not to exceed 25 hours TIS, inspect the bearings by hand-rotating the driveshaft in accordance with the Accomplishment Instructions, Part II, paragraph 1, of BHT ASB 407-01-44, Revision A, dated October 25, 2001 (ASB 407-01-44, Revision A). If a bearing is rough, a seal is torn, the expelled grease has turned black, or metal particles are visible in the expelled grease, replace the affected bearing before further flight.

(2) At intervals not to exceed 100 hours TIS, lubricate the bearings in accordance with the Accomplishment Instructions, Part III, paragraphs 1 and 2, of ASB 407-01-44, Revision A.

(e) Within 100 hours TIS, replace the forward and aft oil cooler blower bearings, P/N 406-040-339-ALL and 407-340-339-103, if installed, with airworthy bearings, P/N 407-340-339-101. Continue to inspect and lubricate the bearings in accordance with paragraph (d) of this AD.

(f) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Regulations Group, Rotorcraft Directorate, FAA. Operators shall submit their requests through an FAA Principal Maintenance Inspector, who may concur or comment and then send it to the Manager, Regulations Group.

Note 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Regulations Group.

(g) Special flight permits will not be issued.

(h) Copies of the applicable service information may be obtained from Bell Helicopter Textron Canada, 12,800 Rue de l'Avenir, Mirabel, Quebec J7J1R4, telephone (450) 437-2862 or (800) 363-8023, fax (450) 433-0272.

Note 4: The subject of this AD is addressed in Transport Canada AD CF-2002-18, dated March 4, 2002.

(i) **Emergency AD 2002-06-52, issued March 15, 2002, becomes effective upon receipt.**

FOR FURTHER INFORMATION CONTACT: Paul Madej, Aviation Safety Engineer, FAA, Rotorcraft Directorate, Rotorcraft Standards Staff, Fort Worth, Texas 76193-0110, telephone (817) 222-5125, fax (817) 222-5961.

Issued in Fort Worth, Texas, on March 15, 2002.

Eric Bries,
Acting Manager, Rotorcraft Directorate,
Aircraft Certification Service.