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No. CF-96-08

AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to Canadian Aviation Regulation (CAR) 593. Pursuant to CAR 605.84 and the further details of CAR Standard 625, Appendix H, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with CAR 605.84 and the above- referenced Standard.

This AD has been issued by the Continuing Airworthiness Division (AARDG), Aircraft Certification Branch, Transport Canada, Ottawa, telephone (613) 952-4357.

CF-96-08 ROBINSON

Applies to all Robinson Helicopter Company Model R22 helicopters.

Compliance is required before further flight after the effective date of this directive, unless accomplished previously.

There have been twenty-six R22 and two R44 fatal accidents involving main rotor blades contacting the helicopter fuselage. A common factor has been identified as limited experience of the pilots in helicopters.

To prevent main rotor stall or mast bumping, which could result in the main rotor blades contacting the fuselage, causing failure of the main rotor system and subsequent loss of control of the helicopter, insert the following information into the Model R22 Rotorcraft Flight Manual and notify all flight crew members. Compliance with the "Limitations" section is mandatory. The "Normal Procedures" and "Emergency Procedures" sections are informational.

[Start of Rotorcraft Flight Manual insertions]

LIMITATIONS SECTION

The following limitations (1 - 3) are to be observed unless the pilot manipulating the controls has logged 100 or more flight hours in helicopters, at least 50 of which must be in a Model R22 or R44 helicopter, and has completed the Robinson video awareness training program:

- (1) Flight when surface winds exceed 25 knots, including gusts, is prohibited.
- (2) Flight when surface wind gust spreads exceed 15 knots is prohibited.
- (3) Continued flight in moderate turbulence is prohibited.

Continued flight in severe or extreme turbulence is prohibited.

Upon inadvertently encountering moderate, severe, or extreme turbulence, adjust forward airspeed to between 60 knots indicated airspeed (KIAS) and 0.7 Vne but no lower than 57 KIAS.

Note: Moderate turbulence is turbulence that causes: (1) changes in altitude or attitude; (2) variations in indicated airspeed; and (3) aircraft occupants to feel definite strains against seat belts.

NORMAL PROCEDURES SECTION

NOTE

Until the FAA completes its research into the conditions and aircraft characteristics that lead to main rotor blade/fuselage contact accidents, and corrective type design changes and operating limitations are identified, Model R22 pilots are strongly urged to become familiar with the following information and comply with these recommended procedures.

Main Rotor Stall: Many factors may contribute to main rotor stall and pilots should be familiar with them. Any flight condition that creates excessive angle of attack on the main rotor blades can produce a stall. Low

main rotor RPM, aggressive manoeuvring, high collective angle (often the result of high density altitude, over-pitching [exceeding power available] during climb, or high forward airspeed) and slow response to the low main rotor RPM warning horn and light may result in main rotor stall. The effect of these conditions can be amplified in turbulence. Main rotor stall can ultimately result in contact between the main rotor and airframe. Additional information on main rotor stall is provided in the Robinson Helicopter Company Safety Notices

SN-10, SN-15, SN-20, SN-24, SN-27, and SN-29.

Mast Bumping: Mast bumping may occur with a teetering rotor system when excessive main rotor flapping results from low "G" (load factor below 1.0) or abrupt control input. A low "G" flight condition can result from an abrupt cyclic pushover in forward flight. High forward airspeed, turbulence, and excessive sideslip can accentuate the adverse effects of these control movements. The excessive flapping results in the main rotor hub assembly striking the main rotor mast with subsequent separation of the main rotor system from the helicopter.

To avoid these conditions, pilots are strongly urged to follow these recommendations:

- (1) Maintain cruise airspeeds between 60 KIAS and less than 0.9 Vne but no lower than 57 KIAS.
- (2) Use maximum "power-on" RPM at all times during powered flight.
- (3) Avoid sideslip during flight. Maintain in-trim flight at all times.
- (4) Avoid large, rapid forward cyclic inputs in forward flight, and abrupt control inputs in turbulence.

EMERGENCY PROCEDURES SECTION

(1) RIGHT ROLL IN LOW "G" CONDITION

Gradually apply aft cyclic to restore positive "G" forces and main rotor thrust. Do not apply lateral cyclic until positive "G" forces have been established.

(2) UNCOMMANDED PITCH, ROLL, OR YAW RESULTING FROM FLIGHT IN TURBULENCE

Gradually apply controls to maintain rotor RPM, positive "G" forces, and to eliminate sideslip. Minimize cyclic control inputs in turbulence; do not overcontrol.

(3) INADVERTENT ENCOUNTER WITH MODERATE, SEVERE, OR EXTREME TURBULENCE

If the area of turbulence is isolated, depart the area; otherwise, land the helicopter as soon as practical.

[End of Rotorcraft Flight Manual insertions]

The video awareness training program can be completed as a self-study course and signed off as such in the pilot's personal logbook. However, it is strongly recommended that training be carried out by an instructor, or company training pilot, and recorded in the pilot's company file and/or personal logbook.

Student pilots must be trained by a helicopter flight instructor who will record it in the pilot's personal logbook and Pilot Training Record.

Alternative means of compliance with the requirements of this directive may be used only if approved by the Director, Airworthiness Branch, Transport Canada, Ottawa. Any application should be made to the appropriate regional office.

This directive supersedes FAA Airworthiness Directive 95-26-04 and Transport Canada Alleviation No. AARDG 95/A67 dated 4 May 1995.

This directive becomes effective 30 April 1996.