
Robinson Helicopter Fleet Consultation Document

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Introduction

1. The CAA is exploring the need for changes in the regulation of the Robinson helicopter fleet. This is in response to a number of accidents involving Robinson helicopters in the last few years.
2. As part of the response to these accidents, the Transport Accident Investigation Commission ("TAIC") and the CAA have reviewed the American Federal Aviation Administration's approach to regulation of the Robinson fleet and the New Zealand position.
3. As a result of the CAA's work in this area, it has come to the conclusion that changes need to be made to the way in which Robinson safety awareness training is conducted, and which pilots should undergo that training. In addition, some aspects of the training are regarded as needing change. The purpose of this document is to set out the issues identified and to explain the measures the CAA is proposing to adopt to address those issues.

Background

4. The factual background leading to this proposal is as follows:
 - In 1995, in response to a series of Robinson helicopter accidents, the FAA introduced Special Federal Aviation Regulation ("SFAR") 73. This established special training requirements for R22 and R44 pilots and imposed experience thresholds for Robinson pilots.
 - In New Zealand, the response to the SFAR was to issue an airworthiness directive, requiring that new pages, drafted by CAA, be inserted into the R22 flight manual. These changes to the flight manual limited operations in high winds, turbulence and wind shear conditions and provided recommendations to avoid main rotor stalls and mast bumping. They also established requirements for R22 pilots to undertake Robinson safety awareness training.
 - A 2014 TAIC report into a fatal R22 crash near Mount Aspiring in April 2011 found that the in-flight break-up was caused by the main rotor blades deviating from their normal operating plane of rotation and striking the tail boom, causing a separation of the tail rotor assembly. This was likely to have been caused by one or a combination of the following conditions:
 - a) severe or extreme turbulence buffeting the helicopter;
 - b) the main rotor speed being allowed to drop below its lower limit;
 - c) the pilots making large and abrupt movements of the controls.
 - The TAIC report recommended that CAA review SFAR 73 in the context of the New Zealand aviation system and adopt relevant improvements that would likely enhance the operational safety of Robinson aircraft in New Zealand.

- On 8 November 2012, an R22 was being piloted between Arrowtown and Wanaka when it suffered an inflight break-up and crashed. The solo pilot was fatally injured. The CAA investigation found that the pilot had a considerable amount of fixed wing experience and a limited amount of rotary wing time. The probable cause was attributed to the helicopter entering a Low G situation.
- On 19 March 2015 whilst an ab initio student was at the controls of an R22 and the helicopter was following a ridgeline, the student pushed forward on the cyclic causing a Low G situation. The helicopter rolled rapidly to the right. The instructor attempted to apply aft cyclic but this was overridden by the student's inputs. Violent shudder and mast bumping was felt as the helicopter descended. The roll was estimated to be 120°. As the rotor disc was felt to reload, the instructor maintained a descent until rotor tach was seen coming back to 100%. The collective was then raised and helicopter was flown out of the valley, and returned to Ardmore as there was no suitable landing area in the forest.
- Three fatal accidents, involving two R44s and an R66, are currently being investigated by TAIC. Two other serious incidents involving an R22 and an R44 are also being investigated by TAIC. However, completed reports are not likely to be published before 2016.

The CAA's review

5. The CAA conducted the review recommended by TAIC between March 2014 and March 2015. This review included:
 - Examination of existing requirements in New Zealand, the USA and Australia;
 - Examination of New Zealand Robinson accident data;
 - Examination of current Robinson safety awareness training in New Zealand and the USA; and
 - Meetings with TAIC, Robinson, the FAA, experienced flight examiners and instructors, and the New Zealand Helicopter Association.
6. The results of the review led the CAA to conclude that:
 - a) There is an absence of rigour in the regulatory oversight of Robinson safety awareness training, in that the CAA has no way of conducting oversight of those giving the training, or the content of the training that is given;
 - b) Similarly, there is no mechanism for ensuring that those providing Robinson safety awareness training have been assessed as appropriate for conducting that training;
 - c) Robinson safety awareness training is necessary for the safe operation of the R22;

- d) Although the R44 and R66 are less susceptible than the R22 to the risks focused on in Robinson safety awareness training, as a result of the similarities of these aircraft types combined with New Zealand accident data it is important that R44 and R66 pilots have a clear understanding of these risks and mitigation strategies;
 - e) However, despite that, there is currently no mechanism for requiring that those flying the R44 and R66 have had that training;
 - f) The 10 hour minimum flight experience requirement for first solo flight in the R22 does not match the 20 hour period required in the SFAR;
 - g) The current R22 flight manual contains seemingly contradictory statements concerning Low G hazard training, which is now prohibited by Robinson; and
 - h) The flight manual includes requirements as to enhanced autorotation which, while consistent with the SFAR, are redundant in New Zealand due to our generic helicopter training requirements.
7. The CAA recognises that the TAIC investigations into the three accidents and two serious incidents referred to above are on-going. However, based on the findings of its review, the CAA believes that changes need to be made in respect of the regulation of the Robinson fleet, and the conduct of the Robinson safety awareness training, in the interim to address the safety risks identified so far.

What the CAA proposes to do

8. As a direct response to these concerns, the CAA proposes to:
- a) Require all Robinson safety awareness training to be done under the authority of either a Part 119 or Part 141 certificate;
 - b) Require the training given to be acceptable to the Director;
 - c) Require those persons delivering Robinson safety awareness training to have been approved to do so by a flight examiner;
 - d) Require Robinson safety awareness training as part of the type rating requirements for the R44 and R66;
 - e) Require Robinson safety awareness training to be completed by all pilots who hold R44 and R66 type ratings and who wish to exercise the privileges of those type ratings;
 - f) Increase the minimum flight experience for first solo flight in an R22 from 10 hours to 20 hours;
 - g) Amend the R22 flight manual to remove references to Low "G" flight demonstration and enhanced autorotations.

9. These proposals are designed to ensure that Robinson safety awareness training is given by persons who are appropriately trained, qualified and competent to do so, and that the training is appropriate and consistent not only with the SFAR but also with New Zealand's specific flying environment. The proposals will also ensure that those wanting to operate the R44 and R66 have undergone the Robinson safety awareness training.

How the CAA proposes to bring these changes into effect

10. Items a) to e) above are matters that could be progressed through changes to the Civil Aviation Rules. The CAA will be initiating the process for those changes to be formally considered for inclusion on the Rule Development programme. However, even if they were to be accepted for inclusion on the programme, of which no guarantee can be provided, a change to the Rules generally takes at least 18 months to go through the process required for bringing a new rule into law. The CAA believes that it needs to take action in the shorter term in the interests of aviation safety.
11. Where the Director believes that the operation of any aircraft or any class of aircraft may endanger persons and that prompt action is necessary to prevent the danger, the Civil Aviation Act 1990 authorises the Director to prohibit or impose conditions on the operation of the aircraft or all aircraft of that class.
12. On that basis, the Director proposes to impose conditions on the operation of an R22, R44 and R66 requiring pilots to have undergone approved Robinson safety awareness training within specified periods. The conditions will be publicly notified and sent to all registered operators of helicopters within the Robinson fleet.
13. The proposed conditions are:
 - a) The pilot must have undergone Robinson safety awareness training, either as part of pre-solo training (for those without a licence), an initial type rating, within a period of 12 months for hire or reward operations, or within a period of 24 months for R44 and R66 operations that are not for hire or reward.
 - b) Robinson safety awareness training must be provided either:
 - i. through Robinson factory-approved safety awareness training with an associated logbook endorsement: or
 - ii. by an appropriate category A or B instructor who is working under the privileges of a certificated Part 119 or 141 organisation, which has an approved exposition detailing the content of the safety awareness training.
 - c) If the Robinson safety awareness training is provided by an instructor under ii. above, the instructor must be approved to provide the training by an appropriate flight examiner.
14. The CAA will be reviewing at entry the operator's exposition and training programme for delivery of the Robinson safety awareness course with an expectation

that it will include a minimum of 1 hour dual instruction/assessment in the respective Robinson helicopter type. The Safety awareness training must also cover aspects outlined in the RHC Safety Course and include mandatory briefing topics on the follow areas :

- Mast bumping;
- Low G hazards, prevention, avoidance and correct recovery technique (including relationship between rate of roll and power in use in a Low G situation);
- Flight into turbulence hazards;
- Energy management, Rotor stall and Rotor RPM decay;
- Robinson Helicopter Safety Notices review; and
- R66 performance (speed power and weight cautions).

15. In addition, the CAA proposes to reissue Airworthiness Directive DCA/R22/27C Revised Operating Limitations – AFM Amendment. This will bring into effect changes in the wording of the "Limitations" section of the R22 Flight Manual:

- To increase the minimum flight experience for first solo flight in an R22 from 10 hours to 20 hours; and
- To remove references to Low "G" flight demonstration and enhanced autorotations.

16. As part of the revision of the R22 Flight Manual, the content describing the Robinson safety awareness training will be removed. That is because that information will form part of the exposition of the certificated organisation approved to carry out the training.

17. To assist in compliance with the above measures, the CAA proposes to produce an Advisory Circular, explaining in more detail the changes and to effectively provide a "one stop shop" for information about the Robinson safety awareness training.

When are the new requirements proposed to come into force?

18. The transition time frames proposed are as follows:

Aircraft type	Proposed requirement	Effective date
R22, R44 and R66	New conditions issued.	1 July 2015
R22, R44 and R66	All new type ratings must include approved Robinson safety awareness training.	31 December 2015

R44 and R66	Those pilots holding an existing type rating who have never received Robinson safety awareness training must have successfully completed approved training before further operation of an R44 and/or R66.	1 July 2016 for pilots engaged in operations for hire or reward.
		31 December 2016 for pilots engaged in operations that are not for hire or reward.
R22	Those pilots holding an existing type rating must have successfully completed approved Robinson safety awareness training before further operation of an R22.	1 July 2016 for pilots engaged in operations for hire or reward.
		31 December 2016 for pilots engaged in operations that are not for hire or reward.
R22	Airworthiness Directive DCA/R22/27C revised to introduce the new flight manual "Limitations" section.	1 July 2015

How much will compliance cost?

19. The CAA recognises that there will be additional costs associated with complying with these proposals. Ordinarily, the CAA would conduct a full cost/benefit analysis in respect of compliance. However, because of the developing nature of the circumstances leading to these proposals, this has not been possible.
20. The CAA has reviewed issues associated with the costs of the proposals, specifically identifying where costs will occur. The costs broadly fall into four areas; course costs, helicopter operating costs, certification costs, and transition costs. Under the existing regime costs already occur. The proposed changes will see minimal changes in costs in some areas, and an increase in costs in other areas, offset by the safety benefits gained including, for example, higher quality courses and a greater awareness of Robinson helicopter operating limitations. The four broad areas are:

(a) Course costs

- The cost will vary depending on who, when, where, and how the course is delivered e.g. factory courses, Part 119 organisation courses, Part 141 organisation courses.
- Cost associated with the development of the course.

(b) Helicopter operating costs

- The cost will vary according to the aircraft type e.g. R22, R44, R66

- The cost will also vary for individual owners, operators, and private hire.

(c) Certification costs

- Organisation certification costs for approval of their course.
- Flight examiner cost associated with gaining the CAA "Robinson Safety Examiner privileges" endorsement.
- Any costs associated with a flight instructor being assessed and signed off by the flight examiner to deliver safety awareness courses.

(d) Transition costs

- Under the proposed transition arrangements, some R22 pilots will be required to undergo the new approved Robinson safety awareness training before the two-year anniversary of their last safety awareness training.

21. In reviewing this part of the proposal it is recommended that individuals and organisations carefully examine their own circumstances to assess costs based on the information above.

How to make a submission

22. The CAA is seeking your feedback on its proposed way forward for the regulation of the Robinson helicopter fleet. Any additional comments are also welcomed.
23. Feedback on the proposal should be provided to the CAA by close of business on **Friday 22 May 2015**.

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24. The CAA appreciates that this is a limited timeframe. However, it considers that this reflects the need to take steps on an urgent basis to respond to what it believes is a significant safety issue.
25. Please note that, once received, submissions become public information that can be requested under the Official Information Act 1982. Please indicate clearly if any parts of your comments are commercially sensitive, or if for any other reason you would not want them disclosed.

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