Certification Memorandum

Post Certification Actions to Verify the Continued Integrity of Rotorcraft Critical Parts

EASA CM No.: CM-S-007 Issue 01 issued 19 August 2015

Regulatory requirement(s): CS 27/29.602, CS 29.547(b), CS 27/29.571, CS 27/29.573 and CS 29.917(b)

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Log of issues

Issue	Issue date	Change description
01	19.08.2015	First issue.

Table of Content

1. Introduction

1.1. Purpose and scope

The purpose of this Certification Memorandum is to supplement the existing guidance for compliance with CS 27/29.602 – Critical Parts, detailing the need for post certification actions to verify the continued integrity of Critical Parts. These actions should ensure that critical parts are controlled throughout their service life in order to maintain the critical characteristics on which certification is based. In addition, the effectiveness of any associated design, maintenance and monitoring provisions, which either help ensure the continued integrity or provide advance indication of impending failure of critical parts, should be assessed.

1.2. References

It is intended that the following reference materials be used in conjunction with this Certification Memorandum:

Reference	Title	Code	Issue	Date
---	Certification Specifications for Large Rotorcraft	CS-29	---	---
---	Certification Specifications for Small Rotorcraft	CS-27	---	---
FAA AC 29-2C	Certification of Transport Category Rotorcraft	---	---	---
FAA AC 27-1B	Certification of Normal Category Rotorcraft	---	---	---

1.3. Abbreviations

AC	Advisory Circular
CM	Certification Memorandum
CS	Certification Specification
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
CIVP	Continued Integrity Verification Programme
CIVPP	Continued Integrity Verification Programme Plan
CIVPR	Continued Integrity Verification Programme Report
SPC	Statistical Process Control
TCH	Type Certificate Holder

2. Background

Service experience has shown that assumptions made during certification regarding the influence of environmental and operational threats upon Critical Parts may not always be valid or remain valid throughout the operational life of the product. In addition, the effectiveness of maintenance actions at both component and aircraft level can also be reduced when compared to that expected at the time of certification. To accumulate significant operational experience without verifying the continued integrity of these components could result in extended exposure to unforeseen degraded safety margins. Accordingly, this CM is intended to propose a process for review of certification assumptions relating to Critical Parts, including the effectiveness of design, maintenance and monitoring provisions, periodically throughout the life of the helicopter type.

3. EASA Certification Policy

3.1. EASA Policy

(a) As part of the process of compliance with CS 27/29.602 the applicant should develop and perform a "Continued Integrity Verification Programme" (CIVP). The CIVP should ensure the continued validity of assumptions made during certification that could affect the integrity of Critical Parts, including the effectiveness of design, maintenance and monitoring provisions developed to comply with CS 29.547(b), CS 27/29.571, CS 27/29.573 and CS 29.917(b). Actions arising from a finding in a CIVP could in the future change the certification approach for similar components or lead to continued airworthiness action.

(b) Applicability: This programme should address all Critical Parts and any other parts for which failure could be Catastrophic. Should the applicant justify that sufficient experience already exists for some parts such that assessment within the CIVP would be of no benefit (typically due to similarity with other products, including their usage), these need not be included in the CIVP.

(c) Objective: The CIVP should assess the validity of assumptions made at the time of certification regarding the condition and operation of the parts identified in para (b). In addition, the effectiveness of any associated design, maintenance and monitoring provisions (e.g. health monitoring, usage monitoring and safety devices) should also be assessed. Additional data that, where available and applicable, can be used to support the CIVP includes;

- Analysis of occurrence reports
- Analysis of unscheduled removal rates
- Strip Reports / Analysis at overhaul
- Additional inspection (non-destructive and/or destructive) on selected high time or rejected components
- Feedback from lead customers
- Audits of subcontractors and suppliers of critical parts.
- SPC data of manufacturing processes affecting critical characteristics
- Review of concessions
- Changes in utilization and operating environment
- Operator / TCH working group activities
- Health monitoring data
- Usage monitoring data

Note: The intention is for this CM to be objective orientated and not prescriptive. Accordingly, the applicant should organise the CIVP in any way which is considered appropriate for performing this review based on experience of their helicopter designs and utilising existing processes for gathering data.

(d) Schedule: The objectives identified in para (c) should be performed at suitable periods through the life of the subject components. To meet the objectives an evaluation will need to be performed of at least one sample of each component, usually from a fleet leading helicopter, however consideration should be given to repeating these tasks where different types of operation, environment or ageing effects could have a significant influence. Where inspections and feedback from service need to be provided by operators or Part 145 maintenance organisations, the information necessary should be clearly specified by the TCH within the Continued Integrity Verification Programme Plan (CIVPP) and relevant maintenance instructions.

(e) Approval: A CIVPP, defining the tasks and schedule of the CIVP should be agreed during certification. Reports stating the findings of the CIVP during service should be furnished to the Agency. The CIVPP may be revised during the life of the rotorcraft if considered appropriate by the TCH and agreed by the Agency. On conclusion of the CIVP, an assessment of all findings should be made by the applicant and reported in the Continued Integrity Verification Programme Report (CIVPR). The applicant should consider the participation of an operator for review of the CIVPR.

3.2. Who this Certification Memorandum affects

Applicants for a type certificate for a helicopter in accordance with CS-27 or CS-29.

4. Remarks

1. Suggestions for amendment(s) to this EASA Certification Memorandum should be referred to the Certification Policy and Safety Information Department, Certification Directorate, EASA. E-mail CM@easa.europa.eu or fax +49 (0)221 89990 4459.

2. For any question concerning the technical content of this EASA Certification Memorandum, please contact:

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