

CS-VLR AMENDMENT 1 - CHANGE INFORMATION

Certification Specifications (CS) are used for establishing the certification basis for applications made after the date of entry into force of a CS including any amendments. Since the complete text of a CS, including any amendments to it, is relevant for establishing the certification basis, the Agency has decided to enact and publish all amendments to CS's as consolidated documents instead of enacting and publishing only the amended text.

Consequently, except for a note "Amdt. VLR/1" under the amended paragraph, the consolidated text of CS-VLR does not allow readers to see the detailed changes introduced by the new amendment. To allow readers to also see these detailed changes this document has been created. The same format as for publication of Notices of Proposed Amendments has been used to show the changes:

1. text not affected by the new amendment remains the same: unchanged
2. deleted text is shown with a strike through: ~~deleted~~
3. new text is highlighted with grey shading: **new**
4.
Indicates that remaining text is unchanged in front of or following the reflected amendment.
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CS-VLR BOOK 1 – AIRWORTHINESS CODE

1. Remove reference in CS VLR.602 to AMC VLR.602: Critical Parts

CS VLR.602 Critical parts

(a) ...

(b) If the type design includes critical parts, a critical parts list shall be established. Procedures shall be established to define the critical design characteristics, identify processes that affect those characteristics, and identify the design change and process change controls necessary for showing compliance with the quality assurance requirements of Part-21.

(See ~~AMC VLR.602~~)

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CS-VLR BOOK 2 - ACCEPTABLE MEANS OF COMPLIANCE (AMC)

2. Amend AMC VLR General to refer to AC 27-1B Change 2

AMC VLR General

The AMC to CS-VLR consists of FAA ~~AC 27-1B dated 30.09.1999~~ AC 27-1B Change 2 dated 25 April 2006 with the changes/additions given in this Book 2 of CS-VLR.

3. Add a new AMC VLR.351 to provide additional guidance for compliance with the EASA's interpretation of CS VLR.351.

AMC VLR.351

Yaw manoeuvre conditions

1. Introduction

This AMC provides further guidance and acceptable means of compliance to supplement FAA AC 27-1B Change 2 (AC 27.351. § 27.351 (Amendment 27-26) YAWING CONDITIONS), to meet the Agency's interpretation of CS VLR.351. As such it should be used in conjunction with the FAA AC but take precedence over it, where stipulated, in the showing of compliance.

Specifically, this AMC addresses an area where the FAA AC has been deemed by the Agency as being at variance to the Agency's interpretation. This area is as follows:

a. Aerodynamic Loads

The certification specification CS VLR.351 provides a minimum safety standard for the design of rotorcraft structural components that are subjected in flight to critical loads combinations of anti-torque system thrust (e.g. tail rotor), inertia and aerodynamics. A typical example of these structural components is the tailboom.

However, compliance with this standard according to FAA AC 27-1B Change 2 may not necessarily be adequate for the design of rotorcraft structural components that are principally subjected in flight to significant aerodynamic loads (e.g. vertical empennage, fins, cowlings and doors).

For these components and their supporting structure, suitable design criteria should be developed by the Applicant and agreed with the Agency.

In lieu of acceptable design criteria developed by the applicant, a suitable combination of sideslip angle and airspeed for the design of rotorcraft components subjected to aerodynamic loads may be obtained from a simulation of the yaw manoeuvre of CS VLR.351, starting from the initial directional control input specified in CS VLR.351(b)(1) and (c)(1), until the rotorcraft reaches the maximum overswing sideslip angle resulting from its motion around the yaw axis.

4. Remove AMC VLR.602: Critical Parts

AMC VLR.602

Critical Parts

1 Explanation

~~The objective of identifying critical parts is to ensure that critical parts are controlled during design, manufacture and throughout their service life so that the risk of failure in service is minimised by ensuring that the critical parts maintain the critical characteristics on which certification is based. Many rotorcraft manufacturers already have procedures in place within their companies for handling “critical parts”. These may be required by their dealings with other customers, frequently military (e.g. US DoD, UK MoD, Italian MoD). Although these programmes may have slightly different definitions of “critical parts” and have sometimes been called “flight safety parts”, “critical parts”, “vital parts”, or “identifiable parts”, they have in the past been accepted as meeting the intent of this requirement and providing the expected level of safety.~~

2 Procedures

~~The rotorcraft manufacturer should establish a critical parts plan. The policies and procedures which constitute that plan should be such as to ensure that:~~

~~a. All critical parts of the rotorcraft are identified by means of a failure assessment and a critical parts list is established. The use of the word “could” in paragraph CS VLR.602(a) of the rule means that this failure assessment should consider the effect of flight regime (i.e. forward flight, hover, etc.). The operational environment need not be considered. With respect to this rule, the term “catastrophic” means the inability to conduct an autorotation to a safe landing, without exceptional piloting skills, assuming a suitable landing surface.~~

~~b. Documentation draws the attention of the personnel involved in the design, manufacture, maintenance, inspection, and overhaul of a critical part to the special nature of the part and details the relevant special instructions. For example all drawings, work sheets, inspection documents etc, could be prominently annotated with the words ‘critical part’ or equivalent and the instructions for continued airworthiness and overhaul manuals (if applicable) should clearly identify critical parts and include the needed maintenance and overhaul instructions. The documentation should:~~

~~(1) Contain comprehensive instructions for the maintenance, inspection and overhaul of critical parts and emphasise the importance of these special procedures;~~

~~(2) Indicate to operators and overhaulers that unauthorised repairs or modifications to critical parts may have hazardous consequences;~~

~~(3) Emphasise the need for careful handling and protection against damage or corrosion during maintenance, overhaul, storage, and transportation and the need for accurate recording and control of service life (if applicable).~~

~~(4) Require notification to the manufacturer of any unusual wear or deterioration of critical parts and the return of affected parts for investigation when appropriate;~~

~~c. To the extent needed for control of critical characteristics, procedures and processes for manufacturing critical parts (including test articles) are defined (for example material source, forging procedures, machining operations and sequence, inspection techniques, and acceptance and rejection criteria). Procedures for changing these manufacturing procedures should also be established.~~

~~d. Any changes to the manufacturing procedures, to the design of a critical part, to the approved operating environment, or to the design loading spectrum are evaluated to establish the effects, if any, on the fatigue evaluation of the part.~~

~~e. Materials review procedures for critical parts (i.e. procedures for determining the disposition of parts having manufacturing errors or material flaws) are in accordance with paragraphs c. and d. above.~~

~~f. Critical parts are identified as required, and relevant records relating to the identification are maintained such that it is possible to establish the manufacturing history of the individual parts or batches of parts.~~

~~g. The critical characteristics of critical parts produced in whole or in part by suppliers are maintained.~~