



**NOTICE OF PROPOSED AMENDMENT (NPA) 2013-04**

**DRAFT DECISION OF THE EXECUTIVE DIRECTOR OF THE EUROPEAN AVIATION SAFETY AGENCY**

**amending Decision 2003/15/RM of the Executive Director  
of the European Aviation Safety Agency of 14 November 2003  
on certification specifications for small rotorcraft (CS-27)**

**and**

**amending Decision 2003/16/RM of the Executive Director  
of the European Aviation Safety Agency of 14 November 2003  
on certification specifications for large rotorcraft (CS-29)**

**and**

**amending Decision 2003/17/RM of the Executive Director  
of the European Aviation Safety Agency of 14 November 2003  
on certification specifications for very light rotorcraft (CS-VLR)**

**'Rotorcraft AMC revision'  
(1st group)**

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## **EXECUTIVE SUMMARY**

This Notice of Proposed Amendment proposes changes to Book 2 of CS-VLR, CS-27 and CS-29. It aims to adopt the latest revisions to FAA AC 27 & 29 material to ensure that EASA AMC is both up to date and closely harmonised with FAA.

## A. Explanatory Note

### I. General

1. The purpose of this Notice of Proposed Amendment (NPA) is to envisage amending Decision 2003/15/RM of the Executive Director of 14 November 2003<sup>1</sup>, Decision 2003/16/RM of the Executive Director of 14 November 2003<sup>2</sup>, and Decision 2003/17/RM of the Executive Director of 14 November 2003<sup>3</sup>. The scope of this rulemaking activity is outlined in Terms of Reference (ToR) 27&29.029 and is described in more detail below.
2. The European Aviation Safety Agency (hereafter referred to as the 'Agency') is directly involved in the rule-shaping process. It assists the Commission in its executive tasks by preparing draft regulations, and amendments thereof, for the implementation of the Basic Regulation<sup>4</sup> which are adopted as 'Opinions' (Article 19(1)). It also adopts Certification Specifications, including Acceptable Means of Compliance and Guidance Material, to be used in the certification process (Article 19(2)).
3. When developing rules, the Agency is bound to follow a structured process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'<sup>5</sup>.
4. This rulemaking activity is included in the Agency's Rulemaking Programme for 2013. It implements the rulemaking task RMT.0134 (27&29.029) 'Rotorcraft AMC revision'.
5. The text of this NPA has been developed under a joint harmonisation activity between the Agency and the Federal Aviation Administration (FAA) of the USA. It is submitted for consultation of all interested parties in accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.
6. The proposed rule has taken into account the development of European Union and international law (ICAO), and the harmonisation with the rules of other authorities of the European Union's main partners as set out in the objectives of Article 2 of the Basic Regulation.

### II. Consultation

7. To achieve optimal consultation, the Agency is publishing the draft decision of the Executive Director on its website. Comments should be provided within **2 months** in accordance with Article 6.5 of the Rulemaking Procedure. This reduced consultation period takes account of the non-controversial nature of these changes and aligns with the FAA consultation period to avoid creating schedule differences.

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<sup>1</sup> Decision 2003/15/RM of the Executive Director of the Agency of 14 November 2003 on certification specifications for small rotorcraft (CS-27). Decision as last amended by Decision 2008/009/R of the Executive Director of the Agency of 10 November 2008.

<sup>2</sup> Decision 2003/16/RM of the Executive Director of the Agency of 14 November 2003 on certification specifications for large rotorcraft (CS-29). Decision as last amended by Decision 2008/010/R of the Executive Director of the Agency of 10 November 2008.

<sup>3</sup> Decision 2003/16/RM of the Executive Director of the Agency of 14 November 2003 on certification specifications for very light rotorcraft (CS-VLR). Decision as last amended by Decision 2008/011/R of the Executive Director of the Agency of 10 November 2008.

<sup>4</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1). Regulation as last amended by Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009 (OJ L 309, 24.11.2009, p. 51).

<sup>5</sup> Management Board Decision concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (Rulemaking Procedure), EASA MB Decision No 08-2007, 13.6.2007. Decision as last amended and replaced by EASA MB Decision No 01-2012, 13.3.2012.

8. Please submit your comments using the **automated Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>.<sup>6</sup>
9. The deadline for the submission of comments is **13 May 2013**.

### **III. Comment-Response Document (CRD)**

10. All comments received in time will be responded to and incorporated in a Comment-Response Document (CRD). The CRD will be available on the Agency's website and in the Comment-Response Tool (CRT).

### **IV. Content of the draft decision**

11. To ensure that AMC remains relevant to the certification of modern rotorcraft, there is a need to maintain and update AMC on a regular basis so that it reflects the latest technological developments and accepted certification practice. The rotorcraft CSs are unique in the Agency's regulatory framework in that Book 2 of the CSs refer directly to FAA ACs; FAA AC 27-1B Change 2 was adopted by the Agency as Book 2 to CS-VLR (Amdt 1, dated 17.11.2008) and CS-27 (Amdt 2, dated 17.11.2008); FAA AC 29-2C Change 2 was adopted as Book 2 to CS-29 (Amdt 2, dated 17.11.2008).
12. The direct reference to FAA AC has the advantage of providing harmonisation with FAA, minimises the burden on the Agency in developing and maintaining a separate AMC and has distinct advantage to the rotorcraft community. However, there is a need to ensure that the Agency's views together with those of European stakeholders are fully accounted for in developing the FAA AC and prior to formally adopting these changes into the Agency's regulatory framework.
13. The AMC changes forming part of the Agency's rulemaking task RMT.0134 (27&29.029) were initiated at the request of the Agency, FAA and both USA and European industry, following a call for proposals. The changed text has been developed jointly using one of the three working methods (individual, small team, or group) depending on task complexity and likely impact on stakeholders. Where a group was used, specific terms of reference of that group were developed and published on the Agency's website. The resulting changes will form Change 4 to the affected ACs. (Note: For adoption of FAA AC at Change 3, see point 16 below).
14. Due to the amount of material amended during this review, changes have been packaged into two groups for public consultation. **This NPA represents the first group** and a second NPA will be published before all material is finally adopted.
15. The detailed changes to FAA AC have been made available for public consultation on the FAA website. Stakeholders are specifically invited to review and comment on this material. Comments received by the Agency in response to this NPA will undergo a joint disposition process with the FAA with the aim of maintaining harmonisation.
16. Proposed changes to FAA AC can be viewed on the FAA website by following the links below:

**AC 27-1B Changed AC:** <http://easa.europa.eu/rulemaking/docs/npa/2013/2013-04/AC%2027-1B,%20Change%203.pdf>

**AC 29-2C Changed AC:** <http://easa.europa.eu/rulemaking/docs/npa/2013/2013-04/AC%2029-2C,%20Change%203.pdf>

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<sup>6</sup> In case the use of the Comment-Response Tool is prevented by technical problems please report them to the CRT webmaster ([crt@easa.europa.eu](mailto:crt@easa.europa.eu)).

**Note: When making comments on the FAA AC material via the Comment-Response Tool (CRT), please insert your comments into the appropriate section of the following tables to facilitate processing by the Agency.**

17. To facilitate the review of this material, the changes proposed together with a description are provided in the tables below.

<b>Section</b>	<b>Title of section</b>	<b>Description</b>
<b>27.29</b>	Empty weight and corresponding centre of gravity	Clarification of empty weight.
<b>27.45</b>	General (Performance)	<p>AC has been added in response to frequent comments and cases of improper application of OEI power. It clarifies that 30 sec OEI power should be limited to 3 scenarios: 1) recovery from engine failure, 2) missed approach, 3) final approach and landing. OEI power ratings should not be part of normal operations, including AEO hover performance.</p> <p>The allowable wind speed for HV testing is increased from 0-3kts to 0-5kts. When the velocity of the wind is very low, the direction and speed are very often variable and past experience has shown that even a slight tailwind during HV trials can lead to a hard landing. With an increase in wind speed the direction is more established and a change of direction is less likely. The change will therefore improve safety without modifying the relevance of the test.</p>
<b>27.79</b>	Limiting height - speed envelope	Included guidance material on extrapolation of H-V data. Applying a penalty of 3 % per 1 000 ft on the W/sigma curve beyond 2 000 ft has previously been used by authorities. Providing explicit guidance will standardise this approach for all applicants who may wish to use this methodology.
<b>27.141</b>	General (Flight Characteristics)	Revised guidance material to address pilot control forces as a result of hydraulic boost system failure and the testing required to address controllability and pilot fatigue concerns.
<b>27.143</b>	Controllability and manoeuvrability	Revised guidance material to include procedures for yaw controllability flight testing.
<b>27.151</b>	Flight controls	Revised guidance material to include qualitative methods for evaluating flight control characteristics.
<b>27.561</b>	General (emergency landing conditions)	Included rearward load factor note for doors and emergency exit design.
<b>27.610</b>	Lightning and static protection	Included reference to SAE Aerospace documents associated with lightning protection.
<b>27.903B</b>	Engines	Revised explanation in guidance material on demonstration of engine restart capability.
<b>27.939</b>	Turbine engine operating characteristics	Revised guidance material to include flight test procedures for evaluating installed engine operating characteristics for FADEC equipped engines. At present the AC is not precise enough in its description to cover all different techniques and manoeuvres to be performed in order to 'determine that no adverse characteristics (such as stall, surge or flameout) are present'.
<b>27.1093</b>	Induction system icing protection	Included guidance material for inadvertent operation in falling and blowing snow conditions with 1 mile or less visibility.

<b>27.1309</b>	Equipment, systems, and installations	Included a reference in AC to new AC 27.1316/29.1316 to promote guidance material for lightning protection of electrical and electronic equipment. Revised AC to remove obsolete software guidance material reference to DO-178A. Revised AC to move HIRF guidance material to new AC 27.1317/29.1317.
<b>27.1316</b>	Aircraft electrical and electronics system lightning protection	New AC 27.1316.
<b>27.1317</b>	High-Intensity Radiated Fields (HIRF) protection	New AC 27.1317.
<b>27.1329</b>	Automatic pilot system	Revised guidance material to address evaluation of autopilot malfunction. The AC adequately addresses limit loads, but flight path deviations are considered only for Instrument Approach Procedures, which constitute a small section of the overall operation of a helicopter. The introduction of sub-para (iv) will allow operators to define a minimum use height or minimum engagement height for hands-off flight.
<b>27.1337</b>	Powerplant instruments	Revised AC to include guidance material associated with fuel quantity indication for fuel tanks that are interconnected and use gravity for fuel transfer between tanks.
<b>27.1357</b>	Circuit protective devices	Revised AC material to clarify the use of a circuit breaker.
<b>27.1543</b>	Instrument markings general	Editorial corrections.
<b>MG 22</b>	Rotorcraft one-engine inoperative training	New MG material to provide explicit guidance on the use of a dedicated OEI training mode that simulates an OEI condition by reducing power on both engines. This will enhance safety compared to today's training practice of selecting flight idle to simulate a failed engine, as recovery following a real engine failure in the training mode will provide a shorter response time to enable the operating engine to accelerate quickly. The issue has been highlighted by a recent training accident in which the engine operating within the 30 second rating failed and the engine at idle could not accelerate quickly enough to recover.

<b>Section</b>	<b>Title of section</b>	<b>Description</b>
<b>29.29</b>	Empty weight and corresponding centre of gravity	Clarification of empty weight.
<b>29.45</b>	General (Performance)	<p>AC has been added in response to frequent comments and cases of improper application of OEI power. It clarifies that 30 sec OEI power should be limited to 3 scenarios: 1) recovery from engine failure, 2) missed approach, 3) final approach and landing. OEI power ratings should not be part of normal operations, including AEO hover performance.</p> <p>The allowable wind speed for HV testing is increased from 0-3kts to 0-5kts. When the velocity of the wind is very low, the direction and speed are very often variable and past experience has shown that even a slight tailwind during HV trials can lead to a hard landing. With an increase in wind speed the direction is more established and a change of direction is less likely. The change will therefore improve safety without modifying the relevance of the test.</p> <p>Specific guidance material is added to ensure standardisation of procedure in using flight test tools to simulate OEI power conditions without actually failing an engine or using time limited OEI ratings. Use of a simulation tool will reduce flight test risk exposure and also reduce maintenance costs resulting from use of OEI power ratings. Validating the tool with a limited number of actual OEI test points will give greater confidence in the certificated performance of the rotorcraft.</p>
<b>29.49</b>	Performance at minimum operating speed	Revised guidance material associated with OGE hover performance flight testing and performance data extrapolation.
<b>29.79</b>	Limiting height - speed envelope	Included guidance material on extrapolation of H-V data. Applying a penalty of 3% per 1000ft on the W/sigma curve beyond 2000ft has previously been used by authorities. Providing explicit guidance will standardise this approach for all applicants who may wish to use this methodology.
<b>29.141</b>	General (Flight Characteristics)	Revised guidance material to address pilot control forces as a result of hydraulic boost system failure and the testing required to address controllability and pilot fatigue concerns.
<b>29.143</b>	Controllability and manoeuvrability	Revised guidance material to include procedures for yaw controllability flight testing.
<b>29.151</b>	Flight controls	Revised guidance material to include qualitative methods for evaluating flight control characteristics.
<b>29.561</b>	General (emergency landing conditions)	Included rearward load factor note for doors and emergency exit design.
<b>29.610</b>	Lightning and static protection	Included reference to SAE Aerospace documents associated with lightning protection.
<b>29.801</b>	Ditching	Revised guidance material to add that emergency exits must have visible markings and meet § 29.811(a).
<b>29.903B</b>	Engines	Revised explanation in guidance material on demonstration of engine restart capability.



<b>29.923B</b>	Rotor drive system and control mechanism tests	Revised guidance material to clarify procedures for qualification of alternate lubricants.
<b>29.939</b>	Turbine engine operating characteristics	Revised guidance material to include flight test procedures for evaluating installed engine operating characteristics for FADEC equipped engines. At present the AC is not precise enough in its description to cover all different techniques and manoeuvres to be performed in order to "determine that no adverse characteristics (such as stall, surge or flameout) are present".
<b>29.1093</b>	Induction system icing protection	Included guidance material for inadvertent operation in falling and blowing snow conditions with 1 mile or less visibility.
<b>29.1309</b>	Equipment, systems, and installations	Included a reference in AC to new AC 27.1316/29.1316 to promote guidance material for lightning protection of electrical and electronic equipment. Revised AC to remove obsolete software guidance material reference to DO-178A. Revised AC to move HIRF guidance material to new AC 27.1317/29.1317.
<b>29.1316</b>	Aircraft electrical and electronics system lightning protection	New AC 29.1316.
<b>29.1317</b>	High-Intensity Radiated Fields (HIRF) protection	New AC 29.1317.
<b>29.1329</b>	Automatic pilot system	Revised guidance material to address evaluation of autopilot malfunction. The AC adequately addresses limit loads, but flight path deviations are considered only for Instrument Approach Procedures, which constitute a small section of the overall operation of a helicopter. The introduction of sub-para (iv) will allow operators to define a minimum use height or minimum engagement height for hands-off flight.
<b>29.1337</b>	Powerplant instruments	Revised AC to include guidance material associated with fuel quantity indication for fuel tanks that are interconnected and use gravity for fuel transfer between tanks.
<b>29.1357</b>	Circuit protective devices	Revised AC material to clarify the use of a circuit breaker.
<b>29.1543</b>	Instrument markings general	Editorial corrections.
<b>29.1583</b>	Operating limitations	Revised guidance material associated with CAT A and B operating limitations.
<b>MG 22</b>	Rotorcraft one-engine inoperative training	New MG material to provide explicit guidance on the use of a dedicated OEI training mode that simulates an OEI condition by reducing power on both engines. This will enhance safety compared to today's training practice of selecting flight idle to simulate a failed engine, as recovery following a real engine failure in the training mode, will provide a shorter response time to enable the operating engine to accelerate quickly. The issue has been highlighted by a recent training accident in which the engine operating within the 30 second rating failed and the engine at idle could not accelerate quickly enough to recover.

18. In addition to the changes specifically developed during this rulemaking task, the Agency is also aware that the FAA has previously made changes to its AC material as a result of a safety-focused study (i.e. AC 27-1B Change 3 and AC 29-2C Change 3 dated 30.9.2008). These changes were not part of a joint development process and have not been formally adopted into the Agency's CSs. To further enhance harmonisation, it is the Agency's intent to include Change 3 material as part of this NPA. **Stakeholders are therefore specifically requested to provide comments on the acceptability of this material for direct adoption.**
19. FAA **AC 27-1B Change 3** and **AC 29-2C Change 3** can be viewed on the FAA regulatory and guidance library website (*currently published on the Agency's website*) at:

— **AC 27-1B, Change 3:**

<http://easa.europa.eu/rulemaking/docs/npa/2013/2013-04/AC%2027-1B,%20Change%203.pdf>

— **AC 29-2C, Change 3:**

<http://easa.europa.eu/rulemaking/docs/npa/2013/2013-04/AC%2029-2C,%20Change%203.pdf>

20. **The envisaged changes to EASA CSs are:**

**(a) CS-27** (Decision 2003/15/RM):

- (1) Amend CS-27 Appendix C;
- (2) Amend CS-27 Book 2, AMC 27 General, para 2.

**(b) CS-29** (Decision 2003/16/RM):

- (1) Amend CS-29 Book 2, AMC 29 General.

**(c) CS-VLR** (Decision 2003/17/RM):

- (1) Amend CS-VLR Book 2, AMC VLR General.

**V. Regulatory Impact Assessment**

21. This NPA addresses AMC only and will have no significant impact. Adoption of the FAA AC will provide greater harmonisation in the acceptable means of compliance required by FAA and EASA. Where existing differences in FAA/EASA policy/rules/interpretation are present, additional AMC in Book 2 of the CSs aims to highlight these differences and to provide prior knowledge to applicants which is clear and transparent in order that they can plan accordingly.

**B. Draft Decision**

The text of the amendment is arranged to show deleted text, new text or new paragraph as shown below:

- (a) deleted or amended text is shown with a strike through: ~~deleted~~
- (b) new or amended text is highlighted with grey shading: **new**
- (c) ... indicates that remaining text is unchanged in front of or following the reflected amendment.

**I. Draft Decision CS-27**

Proposal 1: Amend CS-27 Appendix C to refer to AC 29-2C Change 4 dated xx xxxx 20xx

*C27.2 Applicable CS-29 paragraphs.* The following paragraphs of CS-29 must be met in addition to the requirements of this code:

29.547(a) and (b) – Main and tail rotor structure.

(29.571 – Fatigue evaluation of structure.)

AC Material only: ~~AC 29-2C Change 2 dated 25 April 2006~~

AC 29-2C Change 4 dated xx xxxx 20xx, Paragraph AC29.571A.b(2).

29.861(a) – Fire protection of structure, controls and other parts.

...

29.1587(a) – Performance information.

(See ~~AC 29-2C Change 2 dated 25 April 2006~~ AC 29-2C Change 4 dated xx xxxx 20xx and AMC material to CS-29)

Proposal 2: Amend CS-27 Book 2, AMC 27 General, para 2, to refer to AC 27-1B Change 4

**AMC 27 General**

1. The AMC to CS-27 consists of FAA ~~AC 27-1B Change 2 dated 25 April 2006~~ AC 27-1B Change 4 dated xx xxxx 20xx with the changes/additions given in this Book 2 of CS-27.

2. The primary reference for each of these AMCs is the CS-27 paragraph. Where there is an appropriate paragraph in FAA AC 27-1B Change 4 dated xx xxxx 20xx ~~AC 27-1B Change 2 dated 25 April 2006~~ this is added as a secondary reference.

**II. Draft Decision CS-29**

Proposal 3: Amend CS-29 Book 2, AMC 29 General, to refer to AC 29-2C Change 4

**AMC 29 General**

1. The AMC to CS-29 consists of FAA ~~AC 29-2C Change 2 dated 25 April 2006~~ AC 29-2C Change 4 dated xx xxxx 20xx with the changes/additions given in this Book 2 of CS-29.

2. The primary reference for each of these AMCs is the CS-29 paragraph. Where there is an appropriate paragraph in FAA AC 29-2C Change 4 dated xx xxxx 20xx ~~AC 29-2C Change 2 dated 25 April 2006~~ this is added as a secondary reference.

### III. Draft Decision CS-VLR

Proposal 4: Amend CS-VLR Book 2, AMC VLR General, to refer to AC 27-1B Change 4

#### AMC VLR General

The AMC to CS-VLR consists of FAA ~~AC 27-1B Change 2 dated 25 April 2006~~ AC 27-1B Change 4 dated xx xxxx 20xx with the changes/additions given in this Book 2 of CS-VLR.