



**European Aviation Safety Agency
Rulemaking Directorate**

EXPLANATORY NOTE

CS-25 Amendment 11

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1. GENERAL

Executive Director Decision 2011/004/R amends Decision No 2003/02/RM of 17 October 2003 (CS-25 Initial Issue) as last amended by Executive Director Decision 2010/013/R of 16 December 2010 (CS-25 Amendment 10). It represents Amendment 11 of CS-25 and incorporates the output from the following EASA rulemaking task and editorial changes:

Rulemaking Task No.	TITLE	NPA No.
25.037	Avionics	2009-12

The Notice of Proposed Amendment (NPA) has been subject to consultation in accordance with Article 52 of the Basic Regulation¹ and Article 15 of the Rulemaking Procedure established by the Management Board². For detailed information on the proposed changes and their justification, please consult the above NPA which is available on the Agency's website.

The Agency has addressed and responded to the comments received on the NPA. The responses are contained in a comment-response document (CRD) which has been produced for the NPA (CRD 2009-12) and which is also available on the Agency's website.

¹ 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, 19.03.2008, p. 1.

² 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 08-2007-03, 13.6.2007.

2. CRD REACTIONS

In response to CRD 2009-12, the Agency received the following substantive comment, which is reproduced below together with the Agency's responses:

CRD Comment No.	Commenter	Comment	EASA Response
35	Airbus	<p>AMC 25.1322 5c(5)</p> <p>The term "Normally" selected in lieu of the proposed term "As far as practicable" is ambiguous and does not take enough into account the constraints linked to the management of audio priorities and the simultaneity of alerts. The onset of master visual alert simultaneously with the onset of the master aural alert is not something that may be considered as "Normal" in some particular circumstances, especially in case of multiple alerts triggered in a very short time (visual alerts will be presented at once, potentially at the same time, whereas aural alerts including voice messages should be presented one after the other to ensure that the flight crew will understand each of them, implying the second one might be delayed compared to its associated visual effect). The term "As far as practicable" is more appropriate.</p>	<p>Not Accepted.</p> <p>The lead in sentence defines the design objective of proving synchronous presentation of alerting system elements: This should then be the "norm". However, it is recognised that there may be occasions where synchronisation may be lost due to the presentation of multiple warnings, and this may be permitted.</p> <p>The term "as far as practicable" does not add any further clarity, does not emphasise the design objective and therefore does not justify disharmonising wording agreed jointly by EASA/FAA.</p>

3. EDITORIAL CHANGES

Apart from the changes that resulted from the above NPA, this Amendment 11 of CS-25 also incorporates several changes aiming to correct certain editorial errors or inconsistencies and to update some references to documents. Their description/justification is as follows:

Title of the document and Book 1

Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009³ amended Article 18 point (c) of Regulation (EC) No 216/2008. The amended point (c) does not anymore refer to airworthiness codes but to certification specifications instead. Book 1 contains the certification specifications and Book 2 the acceptable means of compliance.

³ Amending Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008.

Therefore, the title of the CS-25 document is amended on the main cover page and on Book 1 and Book 2 cover pages to read "Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes".

The title and references to Book 1 are replaced by "Certification Specifications" instead of "Airworthiness Code" (table of contents, Book 1 cover page, in CS 25.1).

Book 1

CS 25.177(c) and AMC 25.177(c):

CS 25.177(c) has an editorial mistake dated to JAR-25 Change 16 (from NPA 25B-333).

The concern (which originated with the JAA) was that the sideslip associated with normal operations should at least include a half rudder input. Later, a concern was expressed that it might be possible for a one-half rudder input to exceed 180 pounds of force. So, there was a parenthetical caveat added to state that the input should not be less than one-half of the available rudder control input (but not exceeding a rudder control force of 180 pounds).

The current text means that a minimum of 180 lbs of pedal force is part of the requirement. However, the actual intent was to require at least a half rudder input, but no more than 180 lb of pedal force.

Therefore the text is changed as follows; it has been agreed with FAA who will publish the same text:

"(c) In straight, steady, sideslips over the range of sideslip angles appropriate to the operation of the aeroplane, ~~but not less than those obtained with one-half of the available rudder control input or a rudder control force of 801 N (180 lbf)~~, the aileron and rudder control movements and forces must be substantially proportional to the angle of sideslip in a stable sense. ~~and~~ The factor of proportionality must lie between limits found necessary for safe operation.

The range of sideslip angles evaluated must include those sideslip angles resulting from the lesser of:

- (1) one-half of the available rudder control input; and
- (2) a rudder control force of 180 pounds.

This requirement must be met for the configurations and speeds specified in subparagraph (a) of this paragraph. (See AMC 25.177(c).)

Similarly, **AMC 25.177(c)** must be corrected as follows:

"1 CS 25.177(c) requires, in steady, straight sideslips throughout the range of sideslip angles appropriate to the operation of the aeroplane, ~~but not less than those obtained with one-half of the available rudder control input (e.g., rudder pedal input) or a rudder control force of 801 N (180 lbf)~~, that the aileron and rudder control movements and forces be proportional to the angle of sideslip. ~~Also,~~ The factor of proportionality must lie between limits found necessary for safe operation. The range of sideslip angles evaluated must include those sideslip angles resulting from the lesser of: (1) one-half of the available rudder control input; and (2) a rudder control force of 180 pounds. CS 25.177(c) states, by cross-reference to CS 25.177(a), that these steady, straight sideslip criteria must be met for all landing gear and flap positions and symmetrical power conditions at speeds from 1.13 VSR1 to VFE, VLE, or VFC/MFC, as appropriate for the configuration."

CS 25.253(b) and (c):

The two sub-paragraphs are corrected to remove a mistake when referring to 25.147(e) instead of 25.147(f).

Reason: At JAR-25 Amendment 16, a new JAR 25.147(d) was created which as a consequence moved the former JAR 25.147(d) to (e) and (e) to (f). The references to JAR 25.147(e) in JAR 25.253(b) and (c) have not been revised accordingly, and the mistake was incorporated in the CS-25 first issue.

CS 25.333:

Re-position the (V,n) graph so that:

- the text from the previous CS 25.331 does not appear below the graph,
- the graph appears below the sub-paragraph "(b) Manoeuvring envelope"

Therefore page 1-C-4 is re-organised.

CS 25.785(f)(3)

CS 25.785(f)(3) refers to AMC 25.561(c) whereas this AMC does not exist. It was revoked at JAR-25 Change 15. The reference is deleted.

CS 25.1459 (d)(3):

The term "of this chapter" is deleted as operating rules are not part of CS-25.

Book 2

AMC 25.561(b)(3)

In AMC 25.561(b)(3) there is a reference to FAR 25.561 but the amendment is not mentioned. This AMC is a reminder that interior equipment meeting the older FAR 25.561 requirement (pre-Amendment 25-91, without the 1.33 factor) may need re-substantiation. Therefore, the amendment number is added.

AMC 25.783:

Refer to paragraph 5, sub-paragraph entitled "CS 25.783(b) Opening by persons".

The following sub-paragraph must be revised to:

- Put the text in *Italic font* because this is a quote of the rule;
- Change the numbering of the two bullets for consistency with the rule;
- Replace "are improbable" (second bullet) by "must not be more probable than remote", for consistency with rule CS 25.783(b)(2).

AMC 25.785(d):

In paragraph 5. the word "alighting" is replaced by "landing" for consistency with the Book 1.

AMC 25.807(d):

In paragraph a. the word "alighting" is replaced by "landing" for consistency with the Book 1.

AMC 25.791; AMC 25.803; AMC 25.807; AMC 25.812; AMC 25.815; AMC 25.853; AMC to CS 25.855 and 25.857:

The references to FAA Advisory Circular 25-17 are changed to 25-17A which is the last revision of the applicable FAA Advisory Circular.

AMC 25.1125(a)(3):

This AMC is deleted because the corresponding Book 1 rule does not exist. The rule paragraph 25.1125 was deleted from JAR-25 (at Change 15) because it was not applicable (JAR-25 applicability did not include reciprocating engines); however, the corresponding AMC 25.1125(a)(3) was not deleted at the same time and later copied into CS-25 as well.

AMC 25.1302:

In the Appendix 2, a typo is corrected in the definition of "Alert". See the last sentence, the "a" of "alerts" is missing.

AMC 25.1309 and AMC N° 1 to CS 25.1329:

Following the publication of EUROCAE ED-79/SAE ARP 4754A, the references to the previous revision of these standards (ED-79 and ARP 4754) must be updated.