COMMENT RESPONSE DOCUMENT (CRD) TO NOTICE OF PROPOSED AMENDMENT (NPA) 2010-11

for amending the Executive Director Decision No 2003/02/RM of 17 October 2003

Certification Specifications and Acceptable Means of Compliance for large aeroplanes (CS-25)

"Passenger emergency exits, emergency features and escape routes - Harmonisation with FAA"

EXECUTIVE SUMMARY

The Notice of Proposed Amendment (NPA) 2010-11, dated 8 September 2010, proposed new Certification Specifications for large aeroplanes (CS-25) concerning passenger emergency exits and escape routes for harmonisation with FAA.

Based on the review of stakeholders' comments, this CRD proposes the opening of a new rulemaking task to review the overall emergency evacuation conditions taking into account lessons learned, technological developments and the evolution of passenger characteristics and behaviour.
In addition, key changes are proposed concerning the viewing means at overwing exit and AMCs were developed on that subject.

Explanatory Note

I. General

1. The purpose of the Notice of Proposed Amendment (NPA) 2010-11, dated 8 September 2010, was to propose an amendment to Decision No 2003/02/RM[1] of the Executive Director of the European Aviation Safety Agency of 17 October 2003 as amended by Executive Director's Decision No 2009/017/R of 11 December 2009 (CS-25 Amendment 8[2]).

II. Consultation

2. The draft Executive Director Decision amending Decision No 2003/02/RM was published on the website (http://www.easa.europa.eu) on 8 September 2010.

   By the closing date of 8 December 2010, the European Aviation Safety Agency ("the Agency") had received 26 comments from 14 National Aviation Authorities, professional organisations and private companies.

III. Publication of the CRD

3. All comments received have been acknowledged and incorporated into this Comment Response Document (CRD) with the responses of the Agency.

4. In responding to comments, a standard terminology has been applied to attest the Agency's acceptance of the comment. This terminology is as follows:

   - **Accepted** – The comment is agreed by the Agency and any proposed amendment is wholly transferred to the revised text.
   - **Partially Accepted** – Either the comment is only agreed in part by the Agency, or the comment is agreed by the Agency but any proposed amendment is partially transferred to the revised text.
   - **Noted** – The comment is acknowledged by the Agency but no change to the existing text is considered necessary.
   - **Not Accepted** - The comment or proposed amendment is not shared by the Agency

   The resulting text highlights the changes as compared to the current rule.

5. The Executive Director Decision will be issued at least two months after the publication of this CRD to allow for any possible reactions of stakeholders regarding possible misunderstandings of the comments received and answers provided.

6. Such reactions should be received by the Agency not later than **4 December 2011** and should be submitted using the Comment-Response Tool at http://hub.easa.europa.eu/crt.

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1 Decision No 2003/2/RM of the Executive Director of the Agency of 17 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance, for large aeroplanes («CS-25»).

2 Note that in the meantime CS-25 was last amended by ED Decision 2011/004/R of 27 June 2011 (CS-25 Amdt 11).

IV. Emergency evacuation overall assessment

7. Following comment No. 11, a new rulemaking task will be initiated to review the overall emergency evacuation conditions taking into account lessons learned, technological developments and the evolution of passenger characteristics and behaviour. This rulemaking task will address operational and certification aspects.

V. CRD table of comments, responses and resulting text

(General Comments) -

comment	*10* comment by: *Swiss International Airlines / Bruno Pfister* SWISS International Airl Lines supports NPA 2010-11
response	*Noted*

comment	*12* comment by: *UK CAA* Please be advised that the UK CAA has no comments to make on NPA 2010-11.
response	*Noted*

comment	*16* comment by: *Swedish Transport Agency, Civil Aviation Department (Transportstyrelsen, Luftfartsavdelningen)* The Swedish Transport Agency, Civil Aviation Department is supporting Option 3 of the NPA 2010-11.
response	*Noted*

comment	*24* comment by: *Walter Gessky* Austria supports option 3. Federal Ministry for Transport, Innovation and Technology Department of Civil Aviation A-1030 Vienna
response	*Noted*

comment	*26* comment by: *Luftfahrt-Bundesamt* The LBA has no comments on NPA 2010-11.
response	*Noted*

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comment	*25* comment by: *Cessna Aircraft Company* Attachment #1 Please see the attached file for Cessna Aircraft Company's response. Cessna Aircraft Company has no comments on this issue at this time.
response	*Noted*

A. EXPLANATORY NOTE - IV. Content of the draft opinion / decision - p. 4-5

Background: FAA rulemaking

comment	*11* comment by: *Fons Schaefers* Attachment #2 The Commission, and subsequently EASA, have the duty to propose regulations that foster safety. This is reflected in recital 5 of IR 1702/ 2003, particularly where it reads: '*In adopting measures for the implementation of common essential requirements in the field of airworthiness, the Commission must take care that they reflect the state of the art and the best practices, take into account worldwide aircraft experience and scientific and technical progress*'. In addition, EASA has the obligation to harmonize regulations with other authorities, notably the FAA. With respect to the proposals that are copied from FAR 25 amendment 88, it is my opinion that EASA unduly lets harmonization prevail over the duty reflected in said recital 5. In that light, I submit attached comments, which were earlier submitted to JAA on 29 October 1999 in response to NPA25D-298. These comments remain invariably valid. That also holds true for the safety lessons in the referenced documents. Later evacuations under life threatening conditions confirm the patterns and conclusions described therein. Although these comments pertain to multiple sections of this NPA, I submit them only once to avoid duplication, using the first mentioning of Amendment 88 as the anchor place. Where these comments address JAA, they should now be understood to address EASA.
response	*Partially accepted* Your comment refers to harmonisation with FAR 25 amendment 88, which was covered by JAA NPA 25D-298. First of all, it is to be noted that, compared to JAA NPA 25D-298, this NPA covers also harmonisation with FAR 25 amendments 25-76, 25-94 and 25-116, and so does not only cover safety aspects related to passenger emergency exits, but also those related to access to those exits, escape routes and miscellaneous emergency features. The document enclosed 'Comments on NPA 25D-298 – type and number of passenger emergency exits' contains two recommendations: - The first recommendation is for the JAA to adopt the NPA for the sake of harmonisation. We concur with your suggestion. - The second recommendation (long-term action) is to work with FAA and to develop new exits standards where all aspects such as access, time for an exit to be made available, egress means, are integrated. To answer your second comment, the Terms of Reference of this rulemaking task is specifically to harmonise where deemed appropriate with FAR 25. Thus, the basis to develop this NPA was to review the FAR 25 amendments 76, 88 and 116 and to harmonise them as much as possible. Nevertheless, please note that due to harmonisation with amendments 25-76

and 25-116, our NPA considers the aspects you mention:
- Access to exits
- Time for an exit to be available and
- Egress means

In addition, safety improvements for emergency access and egress were also covered by recently issued amendment 9 (NPA 2008-04) 'Type III emergency exit access and ease of operation'.

In conclusion, the second recommendation to develop new standards could not be considered in this task as it was not covered by the Terms of Reference (ToR). But we agree to open a new rulemaking task to cover the overall emergency evacuation conditions combining operational and certification aspects: profile of passengers, cabin crew seat positions / types and number of exits, access to them, egress means, evacuation times… (see explanatory note item 7.).

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART D DESIGN AND CONSTRUCTION - CS-25.807 Emergency exits p. 14-19

comment *18* comment by: *Airbus*

In CS 25.807(g)(9)(ii), conversion of 7 inches should read 17.8 cm, consistent with paragraphs 25.807((a)(2), (3) and (7)

response *Accepted*

CS 25.807(g)(9)(ii) will be corrected.

resulting text

25.807(g)(9)(ii)
'For a tail cone exit incorporating a floor-level opening of not less than 51 cm (20 inches) wide by 1.52 m (60 inches) high, with corner radii not greater than ~~one third the width of the exit~~ 17.8~~8~~ cm (7 inches), in the pressure shell and incorporating an approved assisting means in accordance with CS 25.810(a), 25 additional passenger seats.'

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART D DESIGN AND CONSTRUCTION - CS-25.809 Emergency exit arrangement p. 19-20

comment *1* comment by: *Zhuguo Zhang*

If the flight crew emergency exit is a top hatch, it is difficulty to compliance with the requirement about viewing of the conditions outside, especially when in darkness and in some condition of landing gear collapse. Because usually there is no enough lights outside around the flightdeck and the flight crew can not use the flashlight outside the flightdeck. And when emergency, the flight crews should come to cabin throught flightdeck door to help passengers evacuation, So I disagree with the proposed para 25.809(a)(2) including a flight crew emergency exit.

For proposed para 25.809(a)(3), I think there is some inconsistency between the two sentences, and I suggest it may be: Except as provided in subparagraph(4), for passenger emergency eixts, a means must also be

provided to permit viewing of the likely areas of evacuee ground contact which must be viewable with the exit closed during all ambient lighting conditions when all landing gears are extended.

For proposed para 25.809(a)(4), I think it is a practice rather than a requirement, because for example Airbus 320 and Boeing 737 next generation, when evacuees are on the escape route required by 25.810(c) the likely areas of evacuee ground contact are viewable.

response *Partially accepted*

1. Not accepted.
CS 25.809(a)(2) requires the "flight crew emergency exit to have means to permit viewing of the conditions outside the exit". This requirement was included in FAR 25 at amendment 25-116 and is proposed to be included in CS-25 in order to prevent injury to the occupants by allowing the occupants to assess the outside conditions and to determine whether an exit should be opened. This requirement is less constraining than CS 25.809(a)(3) (which is not applicable to flight crew emergency exits) as it does not include a requirement for viewing of the 'areas of evacuee ground contact'.

The flight crew compartment windows can be used for compliance with the outside viewing requirement (see answer to comment No 13).

Your comment regarding lighting is also covered by the answer to comment No 13.

2. Not accepted.
Your proposal is about adding "which must be viewable" in the sentence for clarification. We have considered your suggestion carefully and remain of the opinion that the originally proposed wording is acceptable.

3. Partially accepted.
Paragraph 25.809(a)(4) has been removed in response to further considerations prompted by comment No 14. Please refer to the response to that comment.

comment *13* comment by: *Boeing*

Page 19,
Section 25.809(a)(2)

Proposed paragraph 25.809(a)(2) states: *"Each emergency exit, including a flight crew emergency exit, must have means to permit viewing of the conditions outside the exit when the exit is closed, in all ambient lighting conditions with the landing gear extended or in any conditions of collapse. The viewing means may be on or adjacent to the exit provided no obstructions exist between the exit and the viewing means."*

Concern:
The underlined phrases could be literally interpreted to mean that an outside viewing window and exterior lighting is needed on or adjacent to an overhead escape hatch. Boeing doesn't believe this is what is intended. If it is what was intended, then we request that an appropriate cost-benefit analysis be conducted, since this requirement would have a very significant impact on airplane design without providing a commensurate safety benefit, since there is

no service history that suggests such a literal interpretation of the proposed rule is warranted.

Proposed change:
We request that clear guidance be provided in AMC 25.809 specifying that, for overhead or window flight crew exits, the flight deck windows provide an adequate and accessible means for viewing outside conditions (i.e., the flight deck seats and consoles are not considered an obstruction to using the flight deck windows as the outside viewing means). The guidance should also identify that a portable illumination device that is capable of providing outside illumination in dark-of-night conditions may be used in lieu of an exterior-mounted lighting system for the flight crew exits, provided that the portable illumination device is readily accessible to the pilots.

Alternatively, the regulation could be reworded to clearly identify the intent

Justification:
Our suggested clarifications in the AMC are what we consider to be consistent with the intent of the regulation and consistent with how the FAA has applied its similar rule. Existing airplane designs do not include exterior emergency lighting near the flight deck exits as it is not required by either the FAA or EASA under FAR/CS 25.812; nor do they include a viewing port in the overhead hatch. Including the requested information in the AMC is needed to provide airframe manufactures clear guidance that distinguishes the flight crew exits from the passenger exits. Additionally, it will ensure a consistent application of the rule.

Otherwise, an appropriate cost-benefit analysis needs be conducted to justify the need for additional outside viewing means and exterior lights for the flight crew exits.

response *Accepted*

The commenter is correct. It was not intended for instance that CS 25.809(a)(2) be interpreted to mean that an outside viewing window and exterior lighting is needed on or closely adjacent to an overhead flight crew compartment escape hatch.
For instance, a portable illumination device conveniently located such that it can be used through the flight crew compartment windows is considered one acceptable means of compliance.
This will equally be valid in the case where flight crew compartment windows are also the emergency exits.

As suggested, it is agreed that AMC is developed to clarify it.

comment *14* comment by: *Boeing*

Page 20,
Section 25.809(a)(4)

Proposed paragraph 25.809(a)(4) states: *"Passenger exits over the wing need not meet the requirements of subparagraph (3) of this paragraph provided the likely areas of evacuee ground contact are viewable from the escape route required by CS 25.810(c) under all ambient lighting conditions and with the landing gear extended or in any condition of collapse."*

Concern:
For airplanes with off-wing escape slides, opening the exit to go out to the escape route required by CS 25.810(c) will cause the deployment of the escape slide. The inflated slide may block the direct viewing of the ground contact area in certain conditions of gear collapse. This is typically the result of gear collapse conditions that cause the off-wing slides to become shallow such that the end of the slide actually blocks the direct viewing of the ground contact area at the end of the slide. A shallow slide will, in effect, become a walking ramp. It is in these conditions that it is necessary to approach the end of the slide before the actual ground contact area comes into view. However, it would be readily apparent from the wing if there was a significant hazard (fire, water substantial obstruction, etc.) at the end of the deployed slide.

The proposed requirement as written in the NPA recognizes the challenges associated with viewing of the ground contact area (prior to exit opening) for an off wing escape slide and it is appreciated that consideration is being given to viewing this area after exit. However, 25.812 already includes well-established lighting requirements for the escape route, the off-wing assisting means (when required), and the evacuee ground contact area. Therefore, there would be no decrease in the level of safety if 25.809(a)(4) allowed the viewing of the runway end of the escape slide in lieu of directly viewing the ground contact area.

Proposed change:
Revise the text as follows:

"Passenger exits over the wing need not meet the requirements of subparagraph (3) of this paragraph provided the likely areas of evacuee ground contact ***or the runway end of the deployed assisting means*** *are viewable from the escape route required by CS 25.810(c) under all ambient lighting conditions and with the landing gear extended or in any condition of collapse."*

Justification:
A person looking down the illuminated escape will get a good sense of whether or not there is a significant hazard at the bottom end of the slide. In certain conditions of gear collapse, the slide will function as a walking ramp due to the shallow angle of the sliding surface. In this condition, a person entering the slide is not necessarily committed to exiting from the bottom end of the slide if they find there to be a significant hazard on the ground at the end of the slide that was previously undetected. The level of safety is not reduced by making our requested change.

response *Partially accepted*

The commenter makes a valid point, namely that the actual point of ground contact may be concealed from view by the escape slide itself. However, after further consideration, prompted by this comment, the Agency is of the opinion that even further changes to the proposed rule text are appropriate.

The overall intent of the new text in CS 25.809 was to provide outside viewing means that are currently not required by CS-25. In the case of overwing exits however, it is agreed that viewing the ground is not feasible from the exit location, irrespective of whether or not the exit is open. The only point from which the ground can be seen is when nearing the end of the on-wing escape path. As pointed out by the commenter, CS 25.812(h) already requires that the area where the evacuee would make first contact with the ground be

illuminated. There is thus no need for an additional requirement to achieve the same aim. The main thrust of the new requirement was to provide an outside view in order to help when making a decision as to whether to open an exit. The outside view in the case of an overwing exit is of the wing surface and it is proposed to retain the requirement that this be viewable, including in all lighting conditions. However, there is no need to introduce a new regulatory text regarding the view provided when leaving the overwing escape path and descending to the ground.

The text of CS 25.809 is now proposed to read as follows: the paragraph (a)(3) excludes the overwing exits and paragraph (a)(4) is deleted.

comment *19* comment by: *Airbus*

Overhead hatches will not have provisions for outside viewing. Due to the position of the hatch on the ceiling it cannot be ensured to provide viewing means adjacent to the exit without obstructions between the exit and the window. To cover overhead hatch design, CS 25.809(a)(2) should have provisions for considering and allowing reasonable distances between exit and viewing means.

response *Accepted*

Refer to answer to comment No. 13.

comment *29* comment by: *FAA*

The FAA supports the harmonization of the outside viewing means including in CS-25.809(a). The FAA has recently been involved in the certification of several airplanes that are required to comply with the same requirement, Title 14 Code of Federal Regulations (14 CFR) 25.809(a). These certification projects have highlighted the need for some additional guidance material that would be helpful in the certification process. There are three areas that we would like to propose that additional AMC material be included to provide further clarification of the intent of the new requirements. They are discussed below:

a. CS-25.809(a)(2) requires that means to permit viewing of the conditions outside the exit when the exit is closed, in all ambient lighting conditions with the landing gears extended or in any condition of collapse. This proposed change to CS-25.809(a)(2) (and 14 CFR 25.809(a)) does not have any guidance on what level of visibility would be considered acceptable. If the proposed viewing means is through a window or prism, there are considerations related to optical distortion of the viewing means. Also, the level of illumination that is provided needs to be evaluated. We propose that a performance based evaluation be included in the AMC to add clarification of what should be visible using the view means provided under the worst case ambient lighting. The following is a criterion that we have accepted:

A subjective outside viewing test can be conducted to determine if the exterior viewing means and lighting system provides an adequate view/illumination to allow identification of possible hazards in the evacuee ground contact area. For this test, the viewing/lighting system will be deemed acceptable if an object (e.g., a traffic cone) placed in the viewing area is visible to the test witness looking through the emergency exit viewing means that is provided.

	b. CS-25.809(a)(2) requires that means to permit viewing of the conditions outside the exit when the exit is closed, in all ambient lighting conditions with the landing gears extended or in any condition of collapse. For lighting that is installed as part of the emergency lighting system required by CS-25.812 and 14 CFR 25.812, the system's post crash performance requirements are clearly defined. However, if a separate system is installed that is only used to meet the requirements of CS-25.809(a) then the requirements of CS-25.812 would not apply to that system. To address the use of a separate system, we propose that additional AMC material be provided. We propose the following: When a separate lighting system is installed that is only used to meet the requirements of CS-25.809(a), that system should be designed to meet the requirements of CS-25.812(k), for operation after having been subjected to the inertia forces listed in CS-25.561(b), and CS-25.812(l)(3), such that at least one exterior light on each side of the airplane remains operative after a single transverse separation. **c.** CS-25.809(a)(3) requires that for passenger emergency exits, a means must be provided to permit viewing of the likely areas of evacuee ground contact. We propose that additional AMC material be added to clarify what is required for emergency exits on freighter airplanes when non-crew members (commonly referred to as supernumeraries) are allowed on the airplane. It is very common for supernumeraries to be carried on freighter airplanes to, for example, ensure safety and security of the cargo on the airplane. The FAA has always considered the supernumeraries as passengers and has applied requirements for passenger exits. However, the FAA has commonly granted some exemptions from the passenger requirements for the supernumeraries. We propose that AMC material be added to address how supernumeraries should be considered for this regulation. Also when considering an overhead hatch, the geometry of the fuselage physically prevents the viewing of outside conditions and the ground contact point. The FAA has accepted this exit configuration for an airplane with supernumeraries. **JUSTIFICATION:** The FAA has been involved in several certification programs with these new rules and has encountered designs that are not addressed in the current proposed regulation and guidance material. Providing the information on how we resolved these issues to EASA allows incorporating of those solutions into the AMC material. If they are incorporated, this will result in a harmonized application of the regulations.
response	*Partially accepted* a) Accepted As suggested, it is agreed that an AMC is developed to clarify this. b) Accepted As suggested, it is agreed that the proposed AMC text above also contains the following text, to clarify this. c) Not accepted The Agency does not issue exemptions during the approval process for freighter aircraft. The Agency always takes the initial position that supernumeraries on freighter aircraft are to be treated as passengers and afforded the normal level of safety as would be provided on a conventional aircraft. In the event that an applicant wishes to deviate from this principle, special conditions are developed. Currently, no CS-25 or AMC material exists to explain this approach. Whilst such material might be developed in the future to

better document the freighter approval process, the Agency sees no benefit to be gained by developing additional AMC material to cover only the limited issue of outside viewing means.
Issues regarding an overhead cockpit hatch have been covered in response to Comment No 13.

resulting text

CS 25.809 Emergency exit arrangement
(See AMC 25.809 (a))

(a) (1) Each emergency exit, including a flight crew emergency exit, must be a movable door or hatch in the external walls of the fuselage, allowing unobstructed opening to the outside.

(2) Each emergency exit, including a flight crew emergency exit, must have means to permit viewing of the conditions outside the exit when the exit is closed, in all ambient lighting conditions with the landing gears extended or in any condition of collapse. The viewing means may be on or adjacent to the exit provided no obstructions exist between the exit and the viewing means.

(3) For non overwing passenger emergency exits, means must also be provided to permit viewing of the likely areas of evacuee ground contact when the exit is closed with the landing gears extended or in any condition of collapse. Furthermore, the likely areas of evacuee ground contact must be viewable with the exit closed during all ambient lighting conditions when all landing gears are extended.

~~(4) Passenger exits over the wing need not meet the requirements of subparagraph (3) of this paragraph provided the likely areas of evacuee ground contact are viewable from the escape route required by CS 25.810(c) under all ambient lighting conditions and with the landing gear extended or in any condition of collapse.~~

(b) ...'

'AMC 25.809
[...]
In the case of a flight crew emergency exit, a flight deck window as conventionally configured, used in conjunction with a suitably accessible and powerful portable illumination device (e.g. flashlight) will provide an acceptable means for viewing outside conditions.

Flight deck seats, consoles etc., as conventionally configured, are not considered to be obstructions in the meaning of this term in CS25.809(a)(2) in the case where flight deck windows are the viewing means and the exit is an overhead hatch. Furthermore, it is considered that the distance between flight deck windows, as conventionally configured, and an overhead hatch is such that the criterion for the viewing means to be adjacent to the exit is satisfied.'

'AMC 25.809(a)(2)
Emergency exit arrangement

A subjective outside viewing test can be conducted to determine if the exterior viewing means and lighting system provide an adequate view/illumination to allow identification of possible hazards in the evacuee ground contact area. For this test, the viewing/lighting system will be deemed acceptable if an object (e.g., a traffic cone) placed in the viewing area is visible to the test witness looking through the

emergency exit viewing means that is provided.'

'AMC 25.809(a)(2) cont.
When a separate lighting system is installed that is only used to meet the requirements of CS 25.809(a), that system should be designed to meet the requirements of CS 25.812(k), for operation after having been subjected to the inertia forces listed in CS 25.561(b), and CS 25.812(l)(3), such that at least one exterior light on each side of the aeroplane remains operative after a single transverse separation.'

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART D DESIGN AND CONSTRUCTION - CS-25.810 Emergency egress assisting means and escape routes p. 20-22

comment *3* comment by: *Zhuguo Zhang*

It is proposed to reduce the erection time from 10 seconds to 6 seconds for non-over wing type A and Type B exits. While the current regulations require the exit be opened within 10 seconds from the opening means of the exit is actuated. the deployment of the assist means must begin within this time. if the assist means must be erected within 6 seconds from deployment of the assist means, then these requirements may allow up to 16 seconds from the opening means of the exit is actuated to the assist means being fully erected. So I propose not referring to exit opening time and assist means erection time, but the exit preparation time, because the exit preparation time is the only factor affecting whether the exit can be used for evacuation or not. This I propose the exit preparation time is 10 seconds or 16 seconds which depends upon the harmonized conclusion among each agencies and manfacturers.

response *Not accepted*

The proposed change would result in disharmonisation with FAA with no associated safety benefit. The current proposed text is considered to accurately define the requirement.

comment *15* comment by: *Boeing*

Page 20,

Section 25.810(a)(1)(ii)

Proposed paragraph 25.809(a)(4) states *"Except for assisting means installed at Type C exits, it must be automatically erected within 6 seconds after deployment has begun."*

Concern:
It is identified in Note 12 on page 28 that 6 seconds is the current state-of-the-art. This actually depends on how the start of deployment is defined. When the FAA introduced this same requirement at Amendment 25-88, in the preamble to the rule, the FAA identified that the phrase "deployment is begun," as used in §25.810, is generally interchangeable with the phrase "actuation of the inflation controls" that is used in TSO-C69b (and c). However, this is not how the rule has been applied. For emergency exits that have an emergency power assist system, the FAA has recently considered the activation of the

door's power assist system as the start of escape slide deployment. As a result, Boeing has been required to apply for an equivalent level of safety finding for every new escape slide system that has been developed for a door with a power assist system.

Proposed change:
Boeing requests that AMC guidance be provided to define what constitutes the start of deployment. Historically, the start of deployment has been defined as the time at which the escape slide is released from the door. Alternatively, it could be defined in the manner suggested by the FAA in the preamble to Amendment 25-88 (i.e., "deployment time" as used in CS 25-810 being interchangeable with the well established "inflation time" used in the TSO).

Justification:
Providing a definition of what constitutes the start of deployment in an AMC will provide airframe and escape slide manufactures clear guidance that will ensure a consistent application of the rule. This could also help avoid the need to processes unnecessary requests for equivalent level of safety findings.

response *Partially accepted*

After consideration the Agency has concluded that the FAA interpretation of "deployment is begun" is sensible.

In the case of a design providing power assisted door opening, the initiation of the power assist device is effectively the start of slide erection. That is to say, at the point the power assist device is initiated the door operator can no longer prevent the completion of the full sequence leading to the fully open door and erected assisting means.

However, it is understood by the Agency that designs not fully compliant to the 6 seconds requirement have been accepted, on equivalent safety bases, providing the total time to full assisting means erection was no more than 10 seconds from the time opening means to the exit is actuated, i.e. the standard set for Class C exits.

Consequently, and after coordination with FAA, it was agreed to change the CS-25 paragraph to align with the Equivalent Safety Findings issued by FAA: The total time of 10 seconds for erection of assisting means (counted from the time the exit is actuated) is an acceptable alternative for type C exits.

This results in the CS-25 text different from the FAA text, but this is not considered as a regulatory difference as the interpretation of FAA is the same.

comment *20* comment by: *Airbus*

Conversion of 61 cm was done under 25.810(c) with 24 inches for the escape route, while under 25.812(g)(1) 2 feet are referenced. There should be consistency.

response *Accepted*

CS-25.812(g)(1) will be corrected.

comment *22* comment by: *Airbus*

While the proposed rule text in 25.810(a)(1)(ii) requires that all assisting means except on Type C exits have to be erected in 6 seconds, the detailed description in Appendix 1 item 12 just refers to units installed at Type A and B exits.
In addition, the second bullet for the over-wing exits states 10 seconds for the deployment time on any other than Type C exits, which is not consistent with the proposed rule text.
Consistency should be checked between the text of the rule and the description of its intent.

response *Accepted*

There are some inaccuracies (as described in the comment) in the description contained in item 12 of Appendix 1.
However, this cannot be updated because it will not be part of the final CS-25 amendment.

resulting text

CS 25.810 (a)(1)(ii)
Except for assisting means installed at Type C exits, it must be automatically erected within 6 seconds after deployment is begun or within 10 seconds from the time the opening means of the exit is actuated. Assisting means installed at Type C exits must be automatically erected within 10 seconds from the time the opening means of the exit is actuated.

CS-25.812(g)(1)

'[...] and 61 cm (24 inches ~~2 feet~~)'

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART D DESIGN AND CONSTRUCTION - CS-25.812 p. 22

comment *20* ❖ comment by: *Airbus*

Conversion of 61 cm was done under 25.810(c) with 24 inches for the escape route, while under 25.812(g)(1) 2 feet are referenced. There should be consistency.

response *Accepted*

CS-25.812(g)(1) will be corrected.

resulting text

CS-25.812(g)(1)

'[...]and 61 cm (24 inches ~~2 feet~~)'

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART D DESIGN AND CONSTRUCTION - CS-25.813 Emergency exit access p. 22-24

comment *23* comment by: *KLM EASA DOA 21J.012*

Looking at the proposed text of CS-25.813(f) in page 24 of the NPA, it is not clear why there is now a restriction in interior configurations with regards to

	the location of interior doors. Comparing the proposed text and the current text shows the differences that result in prohibiting configurations which have not shown to pose a hazard on the occupants. Current text: (f) If it is necessary to pass through a doorway separating the passenger cabin from other areas to reach any required emergency exit from **any passenger seat**, the door must have a means to latch it in open position. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in CS 25.561 (b). Proposed text (deleted text shown as ~~light grey~~) (f) If it is necessary to pass through a doorway separating **any crew member seat** (except those seats on the flight deck), occupiable for take-off and landing, ~~the passenger cabin~~ from ~~other areas to reach~~ any ~~required~~ emergency exit ~~from any passenger seat~~, the door must have a means to latch it in the open position. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, listed in CS 25.561 (b). It seems that a door which is latched open during TTL and having the specified latching means with respect to the mentioned ultimate inertia forces, is still acceptable in case a cabin crew member needs to pass such a doorway, whereas this would not be acceptable for passengers. We would like EASA to provide the rationale for this differentiation, as our understanding is that EASA considers the presence of cabin crew members at the exit essential for a successful evacuation. In addition, a properly designed door - including latching devices - which is latched open during TTL and having the appropriate exit markings installed, does not jeopardize safety in case of an emergency evacuation.
response	*Not accepted* This proposal comes from the harmonisation with FAR 25 amendment 116. This covers two aspects: - 1.The prohibition of the installation of any doors between passenger seat and emergency exit. This is covered by proposed CS 25.813(e). Following accidents in the 60's and under FAA initiative, regulations were amended to prohibit doors between passenger compartments. However, the regulation was worded such that doors could be installed between passengers and exits provided there are no passengers on both sides of the door. This led to the proposed amendment which prohibits installation of any door between any passenger and any passenger emergency exit. But the intent of the former provisions is kept. - 2. Conditions for installation of doors between crew members (outside the flight crew compartment) and emergency exits. CS 25.813(f) is amended to clarify that it is only applicable to crew members. The proposed amended regulation makes sure that it is only applicable to crew member seats as paragraph (e) already covers passengers' seats. The intent of this paragraph is not changed: it allows doors between crew members' seats and exits under certain conditions. This is not aimed at changing the location of cabin crew members. This covers cases such as cabin crew members located at other seats than the ones at exits (i.e. non required crew members) or a flight

crew rest approved for occupancy during take-off and landing.

comment *28* comment by: *DGAC FRANCE*

The working basis used for this NPA is CS 25/8 (18/12/2009). At the present time the applicable CS is CS 25/9 (12/08/2010).
As Amendment 9 has substantially modified CS 25.813 (c), NPA 2010-11 presents a new CS 25.813 (c) not consistent with present requirements.

CS 25.813 (c) must be modified as follows:
(c) The following must be provided for each Type III or Type IV exit –

(1) There must be access from the nearest aisle to each exit.

(2) In addition, for each Type III exit in an aeroplane that has a passenger seating

configuration of 20 or more and which has only seats installed immediately to the forward and aft of the access route(s)-

(i) Except as provided in subparagraph (c)(2)(ii) of this paragraph, the access must be provided by an unobstructed passageway that is at least 25.4 cm (10 inches) in width for interior arrangements in which the adjacent seat rows on the exit side of the aisle contain two seats, or 33 cm (13 inches) in width for interior arrangements in which those rows contain three seats. The width of the passageway must be measured with adjacent seats adjusted to their most adverse positions. At least 25.4 cm (10 inches) of the required passageway width must be within the required projected opening width of the exit.

(ii) In lieu of one 25.4 or 33 cm (10 or 13 inches) passageway, there may be two unobstructed passageways, that must be at least 15.2 cm (6 inches) in width and lead to an unobstructed space adjacent to each exit. Adjacent exits must not share a common passageway. The width of the passageways must be measured with adjacent seats adjusted to their most adverse positions. The unobstructed space adjacent to the exit must extend vertically from the floor to the ceiling (or to the bottom of upper side wall stowage bins), inboard from the exit for a distance not less than the width of the narrowest passenger seat installed on the aeroplane and from the forward edge of the forward passageway to the aft edge of the aft passageway. The exit opening must be totally within the fore and aft bounds of the unobstructed space.

(3) Each Type III exit in an aeroplane that has a passenger seating configuration of 20 or more and which has an access route bounded by any item(s) other than only seats (e.g. bulkhead/wall, class divider, curtain) to its forward and/or aft side, must be provided with an unobstructed passageway that is at least 50.8 cm (20 inches) in width. The width of the passageway must be measured with any adjacent seats, or other movable features, adjusted to their most adverse positions.

(4) In addition to the access -

(i) For aeroplanes that have a passenger seating configuration of 20 or more, the projected opening of the exit provided may not be obstructed and there must be no interference in opening the exit by seats, berths, or other protrusions (including adjacent seats adjusted to their most adverse positions) for a distance from that exit not less than the width of the narrowest passenger seat installed on the aeroplane.

(ii) For aeroplanes that have a passenger seating configuration of 19 or less, there may be minor obstructions in this region, if there are compensating factors to maintain the effectiveness of the exit.

(5) For each Type III and Type IV exit there must be placards that –

(i) are readable by each person seated adjacent to and facing a passageway to the exit, one in their normal field of view; and one adjacent to or on the exit;

(ii) accurately state or illustrate the proper method of opening the exit, including the correct use of controls, handles, handholds etc.;

(iii) if the exit is a removable hatch, state the weight of the hatch and indicate an appropriate location to place the hatch after removal.

(6) For aeroplanes with a passenger seating configuration of 41 or more, each Type III exit must be designed such that when operated to the fully open position, the hatch/door is automatically disposed so that it can neither reduce the size of the exit opening, the passageway(s) leading to the exit, nor the unobstructed space specified in sub-paragraph (c)(2)(ii) of this paragraph, to below the required minimum dimensions. In the fully open position it must also not obstruct egress from the exit via the escape route specified in CS 25.810(c).

(7) The design of each seat, bulkhead/partition or other feature, bounding the passageway leading to each Type III or Type IV exit must be such that -

(i) evacuees are hindered from climbing over in the course of evacuating.

(ii) any baggage stowage provisions (such as under seat stowage) would prevent baggage items entering the passageway under the inertia forces of CS 25.561(b)(3) unless placards are installed to indicate that no baggage shall be stowed under the seats bounding the passageway.

(iii) no protrusions (such as coat hooks) could impede evacuation.

(8) The design and arrangement of all seats bordering and facing a passageway to each Type III or Type IV exit, both with and without the bottom cushion in place, must be free from any gap, which might entrap a foot or other part of a person standing or kneeling on a seat or moving on or along the seat row.

(9) The latch design of deployable features (such as tables, video monitors, telephones, leg/foot rest) mounted on seats or bulkheads/partitions bordering and facing a passageway to a Type III or Type IV exit, must be such that inadvertent release by evacuating passengers will not occur. The latch design of deployable features must also be such that cabin crew can easily check that the items are fully latched in the stowed position. Placards indicating that each such item must be stowed for taxi, take-off and landing must be installed in the normal field of view of, and be readable by each person seated in each seat bordering and facing a passageway to a Type III or Type IV exit.

response *Noted*

As mentioned in the NPA, the proposed amendment is based on amendment 8. NPA 2010-11 does not impact CS 25.813(c). So we confirm that CS 25.813(c) will be maintained as reflected in the last amendment, which is amendment 10 as of today.

B. DRAFT DECISION - I Draft Decision CS-25 - Book 1 - SUBPART F EQUIPMENT - CS-25.1447 (c) (4) p. 24

comment	*4* comment by: *Air France - Maintenance Quality Assurance* Proposal of modification: "(4) Portable oxygen equipment must be immediately available for each cabin crew member. If the portable oxygen equipment is composed of a portable O^2 bottle and an oxygen dispensing unit (ODU), then ODU must be connected to the 0^2 bottle." Justification: The portable breathing equipment could be designed to meet the requirement of the portable oxygen equipment. In this case, the oxygen supply is connected to the device by design.
response	*Not accepted* The intent of this rule change is to make it clear that designs that allow for easy disconnection of the dispensing unit from the supply unit must not be stowed in a disconnected condition. The Agency does not believe that the commenter's proposed text change provides more clarity on this aspect than the CS 25.1447 text.

comment	*5* comment by: *Air France - Maintenance Quality Assurance* Linked to the previous proposal, AMC 25.1447 (c)(4)(2) shall be removed.
response	*Not accepted* Even if the AMC is partly redundant with the CS 25.1447, it is decided to keep it until further complete review. The paragraph and its AMC are indeed under review by FAA and EASA experts and shall be subject to rulemaking in the coming years.

B. DRAFT DECISION - II Draft Decision AMC - Book 2 - AMC – SUBPART D - AMC 25.809 p. 25

comment	*17* comment by: *Airbus* The first sentence in AMC 25.809 mentions the alternatives to outside mounted lights. Flight crew exits might be normally close to passenger emergency exits and then the emergency lighting system would serve both exit types. But there might be cases, depending on the exit locations, where this is not possible. For those cases the AMC text should contain an alternative that, for flight crew exits, a portable illumination source (torch) might be an acceptable means to judge about the outside condition.
response	*Accepted* Same answer as comment No 13

B. DRAFT DECISION - II Draft Decision AMC - Book 2 - AMC – SUBPART D - AMC 25.813 p. 25-26

comment	*21* comment by: *Airbus* We assume that the AMC to 25.813(c), introduced by CS 25 Amdt. 9, will be maintained.
response	*Noted* CS 25.813 is not proposed to be modified, neither its AMC. So we confirm that AMC to 25.813(c) as amended by amendment 9 is not impacted by this proposal. See answer to comment No 28.

B. DRAFT DECISION - II Draft Decision AMC - Book 2 - AMC – D. Appendix 1: Detailed description of the proposed CS-25 changes p. 27-30

comment	*22* ❖ comment by: *Airbus* While the proposed rule text in 25.810(a)(1)(ii) requires that all assisting means except on Type C exits have to be erected in 6 seconds, the detailed description in Appendix 1 item 12 just refers to units installed at Type A and B exits. In addition, the second bullet for the over-wing exits states 10 seconds for the deployment time on any other than Type C exits, which is not consistent with the proposed rule text. Consistency should be checked between the text of the rule and the description of its intent.
response	*Accepted* There are some inaccuracies (as described in the comment) in the description contained in item 12 of Appendix 1. However, this cannot be updated because it will not be part of the final CS-25 amendment.

B. DRAFT DECISION - II Draft Decision AMC - Book 2 - AMC – F. Appendix 3: Differences between CS-25 and FAR Part 25 p. 33

comment	*2* comment by: *Zhuguo Zhang* Appendix 3 shows the differences between CS-25 and FAR Part 25. While I think there still are some differences, for example, CS 25.809(b) states that "Inward opening doors may be used if there are means to prevent occupants from crowding against the door to an extent that would interfere with the opening of the door", FAR 25.809(b) removed this sentences during Amendment 25-116. and, there are some differences between CS 25.811(e)(4)&(g) and FAR 25.811(e)(4)&(g).
response	*Noted* The Appendix 3 only shows the differences between the requirements when they are impacted by this NPA. This is not an overall comparison of CS-25/FAR 25. NPA 2010-11 considers FAR 25 amendments 25-76, 25-88, 25-94 and 25-116. None of those amendments concerns FAR 25.809(b), FAR 25.811(e)(4) and (g) (inward opening doors and emergency exit sign). So we did not propose any update of equivalent CS-25 paragraphs and consequently did not include this

paragraph into the comparison table.

Appendix A - Attachments

L390-10-3799 Comments.pdf
Attachment #1 to comment #25

NPA25D298comments.pdf
Attachment #2 to comment #11