Comment-Response Document 2015-19

Appendix 1
to ED Decision 2017/015/R

RELATED NPA 2015-19 — RMT.0264 (MDM.066) — 11.5.2017

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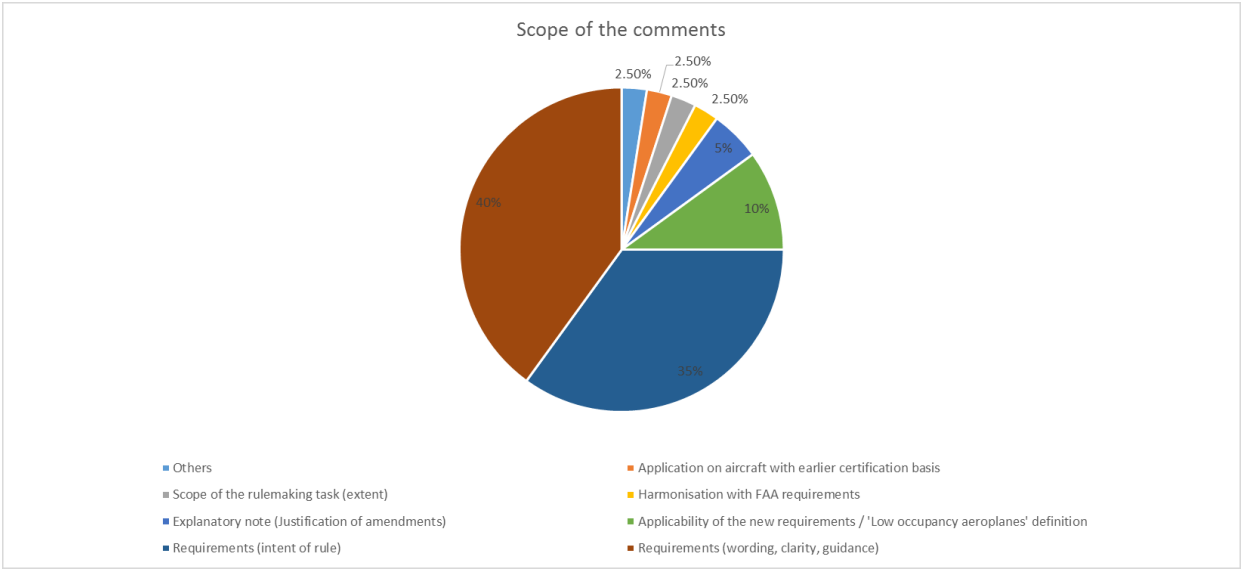
1. Summary of the outcome of the consultation

350 comments to the NPA 2015-19 have been submitted through the **Comment-Response Tool (CRT)**; in addition, 8 comments have been posted through the same tool but attached by mistake to another NPA. It has been decided to also consider these comments and they are copied and responded in Section 3 of this document.

Among the 358 comments received in total, 44 have been raised by Aviation Authorities (the FAA and various European National Aviation Authorities), representing 12 % of the total, and 314 from the aeronautical industry (aircraft manufacturers and modifiers), representing 88 % of the total.

The comments received were highly redundant: 55 % of the comments are identical or very similar to others, such that it can be considered that only 160 unique comments were received and analysed. As a consequence, many of the answers to comments provided under section 3 of this document are references to other previously provided answers.

The scope of these 160 unique comments is summarised in the following chart:



The Review Group analysed all 160 unique comments and made recommendations for the responses; based on these recommendations. The comments received and responses thereto are provided in Section 2 of this document:

— 90 comments were accepted or partially accepted, resulting in revising the proposed amendments to CS-25;

— 70 comments were noted or not accepted, meaning that they had no impact on the final rule text.

The most commented segments of the NPA, resulting in the most significant changes to the proposed amendments to CS-25, were the following:

— New requirement S25.10(b) of Appendix S to CS-25, and associated AMC, related to the installation of interior doors in the cabin of commercially operated aeroplanes;

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— New requirement S25.20(b) of Appendix S to CS-25, and associated AMC, related to the in-flight obstruction (more than minor) of type III or IV emergency exits.

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2. Individual comments and responses

In responding to comments, a standard terminology has been applied to attest EASA's position. This terminology is as follows:

(a) **Accepted** — EASA agrees with the comment and any proposed amendment is wholly transferred to the revised text.

(b) **Partially accepted** — EASA either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.

(c) **Noted** — EASA acknowledges the comment but no change to the existing text is considered necessary.

(d) **Not accepted** — The comment or proposed amendment is not shared by EASA.

(General Comments)	-

comment	*1* comment by: *NHF Technical committee* Norsk Helikopteransattes Forbund does not have any comments to this NPA.
response	*Noted*. *EASA appreciates the support of Norsk Helikopteransattes Forbund.*

comment	*9* comment by: *FAA* The FAA supports continued harmonization taking into account SFAR-109. Depending on State of operation, aspects of the proposed amendment may conflict with operational rules. For example, for Emergency Exit Marking (pg. 41 of 81), the proposal references the use of green symbolic exit signs rather than red letter "EXIT" signs.
response	*Partially accepted.* *Acknowledged and agreed. As explained in the NPA, full harmonisation with SFAR 109 and US operational rules cannot be achieved due to the differences in the structure of the regulatory framework. However, an additional effort has been made to further improve the initially proposed amendments on the harmonisation standpoint, especially regarding the emergency exit marking requirements (see also the response to comment 42).*

comment	*18* comment by: *Luftfahrt-Bundesamt* The LBA has no comments on NPA 2015-19.
response	*Noted*. *EASA appreciates the support of the LBA.*

comment	*79* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

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	The Federal Office of Civil Aviation (FOCA) appreciates the opportunity to comment on this NPA.
response	*Noted*. *EASA appreciates the support of the Federal Office of Civil Aviation.*

comment	*127* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* First, Embraer offers its appreciation to EASA for the work that went into this NPA. The proposal is close to what was drafted by the stakeholder-led group, and EASA's participation in the meetings of that group was a key factor in the success of that group. As such, the following comments are offered as suggestions for improvement to the NPA and are not fundamental disagreements with the proposals. General While the stakeholder group used the amendments applicable of CS 25 that were current at the time of its deliberations in developing the requirements of Appendix S, Embraer recommends that EASA make clear in the AMC to this NPA that the alleviations in Appendix S can be used independent of the certification basis of the base airplane. In a similar manner, the requirements in Appendix S are an option of the applicant to use to develop the certification basis of a qualifying project. Nothing in Appendix S is required unless the applicant opts to use the requirements in lieu of complying with CS 25. It would be helpful if the accompanying AMC made that point clear. There are security requirements implemented in CS 25.795 that are not appropriate for non-commercial nor low occupancy airplanes. Unfortunately the stakeholder group did not address it during its deliberations, but Embraer recommends that the NPA be revised so that compliance with these requirements is exempted by Appendix S in manner similar to that of FAA's SFAR 109. An additional issue that was not addressed directly by the stakeholder group was the approval of the lavatory seat for occupancy for taxi, takeoff, and landing. This is a common installation in smaller executive aircraft, and because it normally includes a rigid lavatory door for privacy concerns, requires consideration of the egress of the passenger seated there. This has previously been acceptable by findings of equivalent level of safety, and Embraer encourages EASA to continue that practice until the requirements can be included in some future revision of CS 25 and/or Appendix S.
response	*Noted.* *EASA appreciates the support of Embraer.* *It is reminded that the determination of the applicable certification basis is ruled by Annex I to Commission Regulation (EU) No 748/2012 (Part-21, more specifically 21.A.17 and 21.A.101), and not by CS-25. Therefore, a clarification in the book 2 of CS-25 is found inappropriate to address this matter.* *In accordance with the aforementioned regulation, the new proposed Appendix S to CS-25*

will primarily apply to new applications for a type certificate, and possibly to new applications for significant changes to a type certificate unless otherwise agreed, as soon as the reference date of application is after the issuance of the amendment of CS-25 that introduced this new appendix.

However, it was also clearly the intent of this rulemaking task (RMT.0264) to eliminate (or reduce drastically) the need for issuance of a certification review item (CRI) in the frame of certification projects, and, therefore, it is expected that applicants will voluntarily elect to comply to these latest requirements irrespective of the applicable certification basis.

In addition, with regard to the comment that most of the proposed new requirements in Appendix S are alternatives to existing CS-25 requirements, it is considered that the proposed new requirements are unambiguous because the wording 'in lieu of requirement (…)' is systematically used where applicable.

After consultation with the review group, EASA concluded that no revision of the proposed amendment to CS-25 and related AMC is needed as a result of this comment. However, EASA has identified the need to clarify the policy it will apply in the course of the discussions on the applicable certification basis for future certification projects, and is considering to issue a Certification Memorandum to address this concern, if confirmed necessary.

It is indeed true that EASA did not address the security requirements in CS 25.795 when preparing the NPA. It is believed indeed that this discrepancy with the SFAR 109 is not desirable in the medium and long term, and that a harmonisation effort is needed. However, directly issuing the final decision incorporating such change to the applicability of CS 25.795, without any consultation, would not be in compliance with the Agency's rulemaking procedure.. In order not to delay the publication of the final decision, it has been agreed within the review group to complete this action in a future CS-25 update (possibly the next CS-25 yearly regular update, if confirmed not to be controversial), but not in the scope of this rulemaking task.

The approval of the lavatory seat for occupancy during taxi, take-off, and landing, was indeed not addressed by the Stakeholder-led rulemaking group and could be considered in a future rulemaking task.

comment *231* comment by: *UK CAA*

Thank you for the opportunity to comment on NPA 2015-19, Executive Interior Accommodation.

Please be advised that the UK CAA supports the proposals contained in the NPA.

response *Noted.*

EASA appreciates the support of the UK CAA.

comment *256* comment by: *DGAC France*

As a general comment, please note that DGAC has no specific comment on this NPA.

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response | *Noted.*

EASA appreciates the support of the French DGAC.

comment | *305* comment by: *GAMA*

The General Aviation Manufacturers Association (GAMA) is an international trade association representing over 90 of the world's leading manufacturers of general aviation airplanes and rotorcraft, engines, avionics, components and related services. GAMA's members also operate repair stations, fixed based operations, pilot and maintenance training facilities and they manage fleets of aircraft.

GAMA appreciates EASA's continued efforts to introduce more appropriate and proportional requirements for the General Aviation community. GAMA is a participant in the Executive Interior Stakeholder-led rulemaking group and supports the concepts of the proposals contained within the NPA and offers the following statements for consideration.

Page 1, Executive Summary
"The proposed amendments have been prepared by…"

GAMA suggests a modification to the existing language to clarify that while the stakeholder led working group prepared a proposal for EASA, ultimately EASA has ownership of the amendments and has modified the stakeholder-led group's original proposal. To that end, GAMA suggests an editorial change such as, "The proposed EASA amendments have been derived from recommendations by a Stakeholder-led rulemaking group's composed of…."

response | *Noted.*
EASA appreciates the support of the GAMA.

EASA accepts the point made however this CRD will suffice as a record of this.

Executive Summary p. 1

comment | *175* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
The proposed amendments have been prepared by a Stakeholder-led rulemaking group (SLRG) composed of ….

Comment:
The NPA is widely based on the SLRG proposed, but it is not what the SLRG has prepared.

response | *Noted.*

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See the response to comment 305.

comment *257* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

Extract:
The proposed amendments have been prepared by a Stakeholder-led rulemaking group (SLRG) composed of ….

Comment:
The NPA is widely based on the SLRG proposed, but it is not what the SLRG has prepared.

response *Noted.*

See the response to comment 305.

2. EN — 2.3. Summary of the RIA p. 5

comment *306* comment by: *GAMA*

Page 5, 2.3 Summary of the regulatory impact assessment (RIA)
GAMA agrees with the decision to go with Option 3 for path for incorporation of these regulations. GAMA suggests that EASA add language to the NPA about how to incorporate these requirements on projects that already have a certification basis established. This could be as easy as EASA stating that for existing certification basis, EASA will entertain issue papers (CRIs) with these same requirements.

response *Noted.*

See the response to comment 127.

2. EN — 2.4. Overview of the proposed amendments p. 6-7

comment *2* comment by: *LHT DO*

The 2nd bullet starting with "the maximum operational ..."

LHT proposes to only apply the one-third requirement to the whole deck, not evaluating every zone between pairs of emergency exits separately.

Otherwise the complete aircraft could lose its classification as low occupancy airplane due to

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the seating arrangement in one single zone in which the 1/3 rule is exceeded.

An aircraft with a cabin arrangement where the maximum operational passenger seating configuration does not exceed one-third of the sum of the passenger seat allowances, falls obviously in the kind of category aircraft (VIP, executive) that is to be addressed with this NPA.

In addition to the above, it has to be recognized that adequate cabin safety requirements are in place and evacuation performance as to be substantiated for certification anyway, an adequate level of safety is maintained.

response

Not accepted.

The one-third discriminant, both for aeroplane decks as a whole and for each zone between emergency exit pairs, was chosen in a pragmatic way in order to limit the applicability of the new Appendix S to passenger cabin interior designs for which the rulemaking task was intended. This limit was confirmed as being appropriate by means of a survey of past approvals.

Instances of cabin zones between emergency exit pairs having passenger seating in excess of the one-third limit were not encountered in this survey.

However, direct usage of the allowances provided in the new Appendix S does not constitute the only route by which its contents may be found acceptable. An applicant may still propose that the Agency accepts, by means of special condition/equivalent safety/deviation (as applicable), a design that marginally fails to meet the applicability criteria of Appendix S.

comment

176 comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract page 7:
However, it was found appropriate to keep an upper passenger capacity limit and, based on the above -mentioned survey, this limit was set to 100 passengers per deck.
This definition better demarcates the market segment of Business Aeroplanes from a pure design perspective, regardless of the type of operations (commercial or non-commercial or commercial).

Comments
This explanation leads to believe that the 100 passenger limitation is applicable whatever the type of operation, which is not true. The 100 passenger limitation is applicable only to appendix S airplanes used in public transport. When used in private transport, appendix S airplanes are limited to 150 passengers.

response

Noted.

The proposal is in line with this comment. EASA will not re-issue an amended explanatory note; this CRD appropriately records the clarification.

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comment *258* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

Explanatory Note 2.4.1
Extract:
However, it was found appropriate to keep an upper passenger capacity limit and, based on the above -mentioned survey, this limit was set to 100 passengers per deck.
This definition better demarcates the market segment of Business Aeroplanes from a pure design perspective, regardless of the type of operations (commercial or non-commercial or commercial).

Comments
When private transports are configured with up to 150 passengers it is probably that some of these occupants are naive. Commercial low density configurations should benefit from the same relief, as occupant familiarity would be similar for many passengers.

response *Not accepted*

The choice of 100 per deck for the limit was based on a survey of previous approvals. This pragmatic approach satisfied the need to set a nominal control on the applicability of the new allowances in CS-25 whilst avoiding limitations on the industry. However, if an applicant desires the approval of a commercially operated design with greater than 100 passengers per deck, which required use of these allowances, EASA, after due consideration of the specificities, may exceptionally permits their use.

EASA, therefore, concludes that the subject limit should remain at 100 passengers per deck.

comment *307* comment by: *GAMA*

Page 6, 2.4 Overview of the proposed amendments
GAMA recommends that EASA adds a definitions section that also includes a list of acronyms.

Throughout the NPA, there is a term called "maximum operational passenger seating configuration" which is believed to be the specific number of passenger seats for that airplane, not the maximum passenger seats allowed by the certification basis. This should be clarified in the definitions section within the NPA.

In addition, there should be guidance on if it is acceptable to limit the passenger capacity to avoid certain certification and operational rules, like aisle width and flight data recorder parameters or if it would still be based on the maximum capacity of the certification basis.

Page 6, 2.4.1 Proposed new definition of 'low-occupancy aeroplane'
"However, it was found appropriate to keep an upper passenger capacity limit and, based on the above -mentioned survey, this limit was set to 100 passengers per deck….

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….This definition better demarcates the market segment of Business Aeroplanes from a pure design perspective, regardless of the type of operations (commercial or non-commercial or commercial)."

GAMA believes this explanation could lead to the understanding that the 100 passenger limitation is applicable regardless of the type of operation, which is not true. The 100 passenger limitation is applicable only to appendix S airplanes used in public transport. When used in private transport, appendix S airplanes are limited to 150 passengers.

response

First part of the comment: Partially accepted.

EASA acknowledges the need to clarify the wording used regarding the passenger seating configuration/capacity. It is agreed that the wording used in the NPA could be misleading: a definition of the 'maximum operational passenger seating configuration (MOPSC)' already exists in Regulation (EU) No 965/2012, Annex I (Definitions) however, this definition is not appropriate for use in an airworthiness specification, since it is established by the operator, 'for operational purposes', 'depending on the operational constraints' and specified nowhere else than in the operations manual.
Moreover, there is already in CS-25 an appropriate term for the parameter used in Appendix S. Therefore, it is decided to replace everywhere in the proposed amendment to the rule: 'maximum operational passenger seating configuration' by 'passenger seating configuration' as consistently used in CS-25. In addition, a new AMC to S25.1 is created in order to clarify the definition, it states the following:
For the purpose of where this term is used in Appendix S:
'Passenger seating configuration' means the maximum passenger seating capacity established during the certification process (either type certificate (TC), supplemental type certificate (STC) or change to the TC or STC, as relevant), conducted for the particular cabin interior and exit arrangement of the aeroplane considered.
It is equal to, or less than, the maximum passenger seating capacity of the relevant type-certified aeroplane as indicated in the aeroplane Type Certificate Data Sheet (TCDS).
It may be less than the total number of passenger seats in the aeroplane that are approved for occupancy during taxiing, take-off and landing, if seats in excess are installed; in such a case, the requirement S25.40(c) Seats in Excess must be complied with.

Second part of the comment: Noted.

Third part of the comment: See the response to comment 176.

2. EN — 2.4. Overview of the proposed amendments — 2.4.2. Proposed amendments to CS-25 p. 7-18

comment

3 comment by: *LHT DO*

Page 13:
Appendix S: Please use exact title instead of "executive interiors".

response

Noted.

The term 'executive interior' used here should be read in the context of the note on page 4 of the NPA. EASA believes that this is not likely to lead to any misunderstanding.

comment	*10* comment by: *FAA* Page 10, Explanatory Note In this table and in many other locations the reference to FAA AC 25.17A is made which is incorrect. It should be FAA AC 25-17A. Correct all references from FAA AC 25.17A to FAA AC 25-17A.
response	*Accepted.* *The spelling mistake of AC 25.17A is replaced by AC 25-17A in the amended AMC 25.811(d).*

comment	*11* comment by: *FAA* Page 14, para 2.4.2 ,Table Item S25.10(b) The inconsistency used to justify allowing interior doors in commercial operation is created by the NPA itself and does not seem to be a good reason to permit doors on commercial ops. Ensure the allowance for interior doors in commercial operation is fully justified by maintaining an equivalent level of safety to CS 25.815.
response	*Partially accepted.* *EASA acknowledges that further justification is necessary for the allowance of interior doors in commercial operation.* *The proposed amendment clearly deviates from the relevant CS requirement (25.813(e)) which unambiguously prohibits such doors. The acceptability of a deviation from this clear requirement is conditional on finding mitigating features that ensure a level of safety as defined in the essential requirements of Annex I to Regulation (EC) No 216/2008. EASA considers that the new proposed Appendix S requirement S25.10(b) offers these mitigating features, which are based not solely on design considerations but also on the type of eligible aeroplanes (i.e. passenger capacity), considering also their typical operations and their in-service experience and good safety records.* *Before amendment FAR 25-15 (effective **24 October 1967**), i.e. before the introduction of 25.813(e), the requirement stated:* *'(d) If it is necessary to pass through a doorway to reach any required emergency exit from any seat in the passenger cabin, the door must have a means to latch it in the open position.'* *The motivation for modifying the rule was adverse safety records on airliners: emergency evacuations were delayed by the interior door between first and economic classes, and it was concluded that the absence of any interior door would have had limited the number of injuries/fatalities.* *The NPRM that introduced later further changes to the rule within amendment FAR 25-116 (later incorporated in CS-25 amendment 12 through NPA 2010-11) develops the reasons for prohibiting interior doors:*

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[Extract from Docket No. 28637; Notice No. 96–9]
'Following accident experience in the 1960's the FAA amended part 25 in Amendment 25–15, to prohibit the installation of doors ''between passenger compartments.'' At the time of the amendment, it was common practice to divide the first class and tourist class cabins with a solid door. ***It was determined in the course of accident investigations that this door could be detrimental in evacuation of passengers, who tended not to recognize that there was an exit beyond the door, even if it were the closest available.*** *The resulting regulatory change was geared specifically at preventing this occurrence. However, the current regulation is worded such that doors may be installed between passengers and exits provided there are not passengers on both sides of the door. For example, a door could be installed across the main passenger aisle at the end of a cabin. The current regulations only require that the door be open for take-off and landing. It is now considered undesirable to permit the installation of a door between any passenger and an exit.* ***Should such a door (either through omission or mechanical failure) become jammed in the event of an emergency evacuation, persons could be prevented or delayed in evacuating*** *which could result in fatalities or injuries that would not otherwise have occurred. The hazards associated with a jammed door are still present whether or not passengers are on both sides of the door, and* ***the recognition factor has not been mitigated.*** *Either could result in the same consequences—failure of some passengers to evacuate the airplane. This notice proposes to prohibit the installation of any door between any passenger and any passenger emergency exit. This would include doors that close off galley areas as passageways or cross aisles, doors across emergency exits (frequently used on ''VIP'' airplanes), and doors into rooms that are occupiable for take-off and landing. This would also include a door across one of the aisles on a multi-aisle airplane, since this closes off the most direct route to an exit for some of the passengers.'*

There is no mention in this NPRM, which was published in 2004 (which was published almost 40 years after Amendment 15), of any additional new incident or accident, occurring after 1967, and involving an adverse role of an interior door (whereas many aircraft, including business jets, were still operated with interior doors during the period). The EASA occurrence database was interrogated and no record related to this issue was found.

The requirement in force before amendment 15 required neither the opening/latching means to sustain the crash loads, nor monitoring of the status open/close of the door, nor a frangibility feature,… nor any of the compensating factors that are now included the new proposed Appendix S to CS-25, on top of the limitation to low occupancy aeroplanes with a passenger seating capacity of 19 or less.
According to the above extract, two arguments were retained for banning the interior doors (highlighted in bold in the above text):

1. *The door could jam in a position other than fully open, and then delay the evacuation in case of emergency (crash) landing.*
2. *The layout featuring the interior door could prevent recognition from the passengers of the closest exit, resulting in the same consequence as above (delay in evacuation).*

The proposed amendment offers reasonable mitigations for both of the above risks:

Firstly, by ensuring that interior doors are allowed only on aeroplanes whose evacuation capabilities are better than those of airliners and which are believed to enable a much lower evacuation time than that required by CS 25.803(c). This offers the necessary margin to still achieve the minimum expected performance of evacuation even if an internal door were to

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slightly degrade the evacuation capability.

Secondly, by requiring mitigating design features and additional mitigations based on approved procedures and/or limitations (crew procedures, passenger briefing); in particular, the risk of jamming is proposed to be mitigated in the same manner as other systems in CS-25, i.e. through safety analysis in compliance with 25.1309 methodology and safety objectives in line with 25.783(b)(2) (loss of an emergency exit should not be more probable than remote), and allowing for credit from compensating design features such as frangibility or multiple panels. Moreover, both the jamming and the recognition risks are mitigated in their effect on the evacuation time by the requirements on minimum exits number and exits locations with respect to the door and to the passenger seats.

comment *24* comment by: *FAA*

Page 15, Para 2.4.2, Table Item S25.10(d)

Refers to a 'similar' safety level; should be equivalent. The FAA does not consider this provision to offer an equivalent level of safety, which is essential for commercial operations.

Change this provision so that it provides an equivalent level of safety.

response *Not accepted.*

The proposed new alternative requirements offer mitigating features that maintain a level of safety as defined and required in the essential requirements of Annex I to Regulation (EC) No 216/2008. However, by the nature of the subject, i.e. the deactivation of existing emergency exits, it cannot be claimed that the safety maintained is literally identical, and thus the term 'similar' was used in the quoted table entry rather than 'equivalent'.

On the one hand, the alternative requirements offer additional flexibility, i.e. the maximum distance from some passenger seats to the nearest exit on one side of the fuselage may be somewhat larger than would be found on that same airframe without disabled exits. On the other hand, the alternative requirements now set limits on dead-end zone dimensions and also impose powerful limits on the total passenger capacity and the passenger capacity per zone. Indeed, some disabled exit configurations acceptable by the current regulations, will become unacceptable in the future.

EASA believes that the commentator's desire for equivalency has been met in most cases, exceeded in some, and missed in only a few. It is therefore believed that there is no need to change this provision to achieve the level of safety required for this rulemaking task.

comment *46* comment by: *Andrew Hanley (Jet Aviation)*

S25.40(a)
Extract:
The proposed text is harmonised with Article 6 of SFAR No. 109.

This is not entirely accurate. The proposed rule also allows for non-installation of lavatory ash trays, however SFAR 109 only refers to the passenger signs and does not include lavatory placards and ash trays.
This could create misunderstanding and non-compliances for applicants seeking dual EASA

and FAA certification.

Suggested text:
The proposed text is **partially** harmonised with Article 6 of SFAR No. 109.
Or
EASA should specify which parts are harmonised and which are not.

response *Partially accepted.*

It is acknowledged that the scope of S25.40(a) is wider than Article 6 of SFAR No. 109. However, the risk of misunderstanding is believed to be quite low, and EASA's expectation is that the FAA might wish to revise SFAR 109 after publication of the new EASA requirements. This CRD will record adequately the clarification and there is no need to modify the proposed text.

comment *73* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

FOCA supports the proposed change to CS 25.1447 and AMC 25.1447.

response *Noted.*

EASA appreciates the support of the Federal Office of Civil Aviation.

comment *227* comment by: *sabena technics BOD*

It is suggested to add a new article to cover smoke detection of isolated compartment for executive interior for harmonization with SFAR 109. In fact current executive interior design meets CS 25.858 (a) through (d) but SFAR 109 article 13 has added the following requirement for passenger capacity of 20 or more:
"The [fire] indication must identify the compartment where the fire is located."
This already caused issue with FAA to validate an EASA STC where only a single warning was available for flight crew.

response *Not accepted.*

This harmonisation issue was actually considered during the discussions within the rulemaking group and it was decided to address this concern in the AMC to S25.10(c), paragraph b: 'For complex interiors with many isolated compartments remote from each other, there should be a means allowing the flight or cabin crew to readily identify in which compartment smoke/fire has been detected'.
EASA elected to have this mentioned in the AMC because it was believed it was too prescriptive: some interior accommodations, in particular in small aeroplanes, are simple enough and do not require separate indications for each compartment. EASA's expectation is that the FAA might wish to revise SFAR 109 after publication of the new EASA requirements.

2. EN — 2.4.2 Proposed amendments to CS-25 — Overview of the applicability of new Appendix S p. 19-20

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comment *13* comment by: *LHT DO*

P.19, table 2: S25-10(b) is applicable only to commercially operated airplanes.

response *Not accepted.*

It is true that S25.10(b) is primarily intended to allow interior doors in commercially operated aeroplanes (with a maximum seating configuration of 19 or less). However, a non-commercially operated aeroplane compliant to this requirement would be acceptable for certification. In fact, for aeroplanes intended for dual operation types (commercially and not commercially), compliance with this requirement might be of some interest.

comment *47* comment by: *Andrew Hanley (Jet Aviation)*

Typo.
S25.10(b) – an 'X' is indicated under the non-commercial column, however S25.10(b) 'Interior Doors on commercially operated aeroplanes' is only applicable to commercial aeroplanes.
Suggest to delete 'X' from cell S25.10(b) non-commercial.

response *Not accepted.*

See the response to comment 13.

3.2.1. Draft amendment to CS-25 — Book 1 — CS 25.788 Passenger amenities p. 22

comment *4* comment by: *Airbus Operations GmbH*

Airbus Comment No. 1 on:
- CS 25.788(a)(4) on Showers

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 22/81, CS 25.788(a)(4)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

CS 25.788(a)(4) on Showers
(a(a) Showers: If a shower cubicle is installed (See AMC 25.788(a) and AMC 25.1447(c)(3)):
(…)
((4) firm handhold features must be provided inside the shower cubicle; and

Comment:

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Similarly to what stated in AMC to Appendix S, S25.30(b), it should be detailed in AMC to CS 25.788(a)(4) that it is acceptable that occupants may steady themselves by leaning on sidewalls of the shower cubicle if narrow enough to provide such possibility. A maximum distance criteria to benefit from this possibility could be the 60in generally considered for the average span between left and right hands of standard human dimension.

Airbus suggests adding an AMC section.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Take benefit of narrow shower dimension to not be forced to add a handhold feature.

response

Partially accepted.

EASA agrees with the comment: the CS requirement should be less prescriptive and offer the possibility to use the walls of the shower cubicle to steady oneself. EASA proposes to replace the initially proposed CS 25.788(a)(4) by the following, which is consistent with the wording used in CS 25.785(j):

'(4) there should be a means in the cubicle to steady oneself in moderately rough air; and'

EASA proposes, in addition, to mention the following in the corresponding AMC 25.788(a): 'A means to steady oneself could be either a firm handhold(s) specifically designed and provided for the purpose of an intrinsic design feature of the cubicle. For instance, if one or more of the cubicle wall-to-wall dimensions does not exceed 1 metre (3.3 feet), it may be assumed that an occupant can steady himself/herself by placing his/her hands on opposite wall surfaces'.

The proposed maximum size wall-to-wall dimension of the cubicle has been computed as being the mid-distance between elbow span and arm span for the 5th percentile female.

comment

14 comment by: *LHT DO*

25.788(a)(4): Change to "Firm handhold or equivalent features.....". Leaning to cubicle wall or supporting on the wall could be acceptable.

response

Partially accepted.

See the response to comment 4.

comment

48 comment by: *Andrew Hanley (Jet Aviation)*

CS 25.788 (a)(4)

Extract:

(4) firm handhold features must be provided inside the shower cubicle; and

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A 'firm hand hold feature' suggests a specific device e.g hand rail/grip must be provided, however this may not be necessary in small shower cubicles where leaning on the cubicle walls could be sufficient.

Suggest to add AMC to CS 25.788(a)(4):
It is acceptable that occupants may steady themselves by leaning on sidewalls of the shower cubicle if narrow enough to provide such possibility.

response

Partially accepted.

See the response to comment 4.

comment

134 comment by: *Bombardier*

NPA Reference CS 25.788(a)(4):
firm handhold features must be provided inside the shower cubicle;

Comment:
A less prescriptive requirement is suggested in order to allow for the walls or other features of the shower cubicle that cannot be grasped to be used by the occupant to steady themself. It is considered noteworthy that:

- for a small shower cubicle, a dedicated handhold (grab bar) may pose a greater risk of head injury to the occupant than simply collapsing to the floor of the cubicle
- for cases where a means to steady oneself is required without notice, there is likely to be insufficient time to locate and grab a dedicated handhold

The following is the suggested revised text:
(4) firm handholds or another means to enable persons to steady themselves must be provided inside the shower cubicle;

response

Partially accepted.

See the response to comment 4.

comment

177 comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC 25.788(a)(4):
firm handhold features must be provided inside the shower cubicle

Comment:
The term handhold tends to be understood as refering to a device specifcally installed to permit an occupant to steady himself. Such devices may not be necessary if it is shown that

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an occupant can steady himself by other means, e.g. by leaning against a cubicle wall.

Requested change and proposed text:
means must be provided inside the shower cubicle to permit an occupant to steady himself in moderate turbulence.

response *Partially accepted.*

See the response to comment 4.

comment *259* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.788(a)(4)
Extract:
firm handhold features must be provided inside the shower cubicle

Comment:
The term handhold tends to be understood as refering to a device specifcally installed to permit an occupant to steady himself. Such devices may not be necessary if it is shown that an occupant can steady himself by other means, e.g. by leaning against a cubicle wall.

Requested change and proposed text:
means must be provided inside the shower cubicle to permit an occupant to steady himself in moderate turbulence.

response *Partially accepted.*

See the response to comment 4.

comment *262* comment by: *Bombardier*

Reference NPA CS 25.788:
(See AMC 25.788)

Comment:
There is no AMC 25.788 proposed for Book 2; only AMC 25.788(a) and AMC 25.788(b) are proposed and each is properly referenced within the text of the requirement. We suggest removing this note.

response *Not accepted.*
It is EASA practice that the reference for AMC material related to a CS paragraph, is presented below the title of the CS paragraph. The AMC material may be a single AMC or it can be split into several specific paragraphs in Book 2.

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comment *308* comment by: *GAMA*

Page 22, CS 25.788
Currently there is not "AMC 25.788" proposed for Book 2; only AMC 25.788(a) and AMC 25.788(b). GAMA recommends EASA add a "AMC 25.788" section.

Page 22, CS 25.788(b)
25.788(b) describes the requirements for large display panels. Historically, this has referred to monitors however recent trends have seen an increased request for glass panels that may not be considered large. GAMA suggests EASA consider if it is appropriate to provide clarification in paragraph (b) that large display panels includes monitors as well as other types of glass panels.

Page 22, CS 25.788(a)(4)
GAMA suggests that EASA provide a less prescriptive requirement in order to allow for the walls or other features of the shower cubicle that could be used by the occupant to steady himself or herself.
It is considered noteworthy that:

- for a small shower cubicle, a dedicated handhold (grab bar) may pose a greater risk of injury to the occupant than simply collapsing to the floor of the cubicle
- for cases where a means to steady oneself is required without notice, there is likely insufficient time to locate and grab a dedicated handhold
- for small cubical areas, it would be possible for the occupant to press upon two walls

To that end, GAMA suggests EASA modify the language to read "(4) means must be provided inside the shower cubicle to permit an occupant the ability to steady themselves inside the shower cubicle; and"

response *Page 22, CS 25.788: Not accepted. See the response to comment 262 above.*

Page 22, CS 25.788(b): Not accepted.

Monitors are considered unambiguously as display panels. AMC to 25.788(b) provides guidance to determine whether a large display panel (for instance a monitor) is to be considered large or not. Other types of glass panels, possibly not considered as equipment but part of the furniture, are dealt with in paragraph 25.603(a) and the associated AMC.

Page 22, CS 25.788(a)(4): Partially accepted.

See the response to comment 4.

3.2.1. Draft amendment to CS-25 — Book 1 — CS 25.807 Emergency exits p. 22

comment *7* comment by: *Airbus Operations GmbH*

Airbus Comment No. 1bis on:
- CS 25.807(e)(2) on maximum seat to exit distance
- AMC 25.807

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Note: This comment is related to 2 sections and will be placed into the CRT database at both positions.

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 22/81, CS 25.807(e)(2)
Page 40/81, AMC 25.807

2. PROPOSED TEXT / COMMENT:

2.1. Airbus recommends to cancel the addition of paragraph (2) to CS 25.807(e) and to revert back to CS 25.807(e) as written in the current CS-25.

2.2. Airbus would accept the transfer of the text of this proposed section (e)(2) into AMC 25.807, provided it is changed as follows: *(new text underlined , deleted text ~~strikethrough~~*)

AMC 25.807
Emergency exits
(…)
1. General
FAA Advisory Circular 25.807-1 'Uniform Distribution of Exits', dated 08/13/90 is accepted by the Agency as providing acceptable means of compliance with CS 25.807(e).
2. Seat-to-exit distance
2.1. On a single-deck aeroplane, each passenger seat approved for use during taxiing, take-off or landing should be located in a way that:
(i) it is within 9.14 m (30 ft) from the nearest emergency exit on one side of the fuselage , and within 13.72 m (45 ft) from the nearest emergency exit on the other side of the fuselage; and
(ii) the occupant of that seat would not have to traverse any point in the cabin that is more than 9.14 m (30 ft) from the nearest emergency exit on one side of the fuselage and more than 13.72 m (45 ft) from the nearest emergency exit on the other side of the fuselage to reach any emergency exit.
2.2. On a multiple-deck aeroplane, applicability of the above criteria should take into account the possibilities of movement between decks offered by the location and number of stairs connecting the decks.
2.3. When calculating the distance from a passenger seat to an exit, ~~as required by CS 25.807(e)(2),~~ this distance should be taken as… *[no change to the end of the paragraph]*
3. Aeroplanes with an approved passenger seating configuration of 19 or less
3.1. For such aeroplanes ~~with an approved passenger seating configuration of 19 or less~~, only one pair of emergency exits is required. However, such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h).
3.2. Such aeroplanes would not, however, be required to meet the 18.3-m (60-feet) rule of CS 25.807(f)(4). The distance between each passenger seat and the nearest available exit may be determined considering all available exits, including the ones addressed by CS 25.807(h).

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
In addition to a regrettable disharmonization with FAR § 25.807(e), the proposed introduction of CS 25.807(e)(2) introduces additional prescriptive requirements to a § that

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already basically consists in a set of highly prescriptive requirements that drive the design of airliner cabins.
This set of requirements simply adds other arbitrary design constraints on top of the 60ft rule that is itself recognized as fully arbitrary.
One can also see in the nature of the proposed change a contradiction with the expressed willingness of EC and EASA to move towards performance-based instead of prescriptive requirements. This intent clearly appears in the EU Commission proposal for a new Basic Regulation, published on 7 December 2015.
The proposed text might be offered as an acceptable means of compliance with CS 25.807(e), provided it is changed to recognize the additional egress possibilities resulting from the use of stairs in multiple-deck aeroplanes. It is the main purpose of our proposal for AMC 25.807, which in addition includes editorial work for clarification.

response

Partially accepted

Since no consensus of the stakeholder-led review group could be reached, the following decision and justification has been established by EASA:

EASA acknowledges the comment and agrees that the introduction of CS 25.807(e)(2) initially proposed in the NPA would have led to disharmonised regulation. In addition, it was indeed very prescriptive. Therefore, it is proposed to revert to the initial intent of the rulemaking group, which was to provide additional criteria for achieving an exit distribution that is considered uniform from the perspective of the passenger seat distribution, for aeroplanes that are not covered by the existing guidance (FAA AC 25.807-1). The requirement CS 25.807(e) will therefore remain unchanged compared to the current CS-25, but the new proposed seat-to-exit distance will be introduced in the AMC to 25.807(e), with an applicability that is limited to those aeroplanes for which the FAA AC 25.807-1 does not provide sufficient guidance.

The intent of this amendment is to be able to apply a clear and acceptable criteria for emergency exits uniformity for new aeroplanes that are required to have no more than one pair of emergency exits. In the past, such criteria did not exist and this situation led to the approval of cabin designs featuring seat-to-exit distances that are believed not to be consistent with the requirement of CS 25.807(f)(4) (the so-called '60 ft rule' which applies only to aeroplanes that are required to have more than one passenger emergency exits for each side of the fuselage). While the in-service experience of those approved aeroplanes has not shown so far to have measurable adverse safety effects, EASA wishes to restore some consistency in the requirements (uniformity and exit-to-exit distance) and believes that future aeroplanes that are not required to have more than one pair of exits should be designed with the objective of not creating seat-to-exit distance in excess to the one that is now prescribed in the future AMC to 25.807(e).

EASA acknowledges that the new criteria set out in the AMC will need to be proportionately applied on already certified type designs.

Note: as a side effect, the new proposed S25.10(d) and associated AMC have been revised for consistency.

comment *49* comment by: *Andrew Hanley (Jet Aviation)*

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This rule is written to address both commercial and non-commercial aeroplanes and is resulting in a more stringent requirement compared to what is currently acceptable for non-commercial aeroplanes (30ft & 60ft criteria in some cases).

It was argued by some members of the SLRG to retain a more stringent requirement for seat-to-exit distance (30/45ft) for both commercial and non-commercial and compensate by allowing alleviations for low occupancy aeroplanes (commercial) from the requirements of the 60ft between exits rule, 25.807(f)(4). However, S25.10(e) only allows for non-compliance with 25.807(f)(4) for non-commercial aeroplanes.

This new requirement to include commercial aeroplanes has been adapted from the deviations issued for non-commercial aeroplanes which results in unfairly limiting the non-commercial aeroplanes. Cabin interiors on non-commercially operated aeroplanes have been approved for years with greater than 45ft and has been accepted due to the compensating features non-commercially aeroplanes offer.

JBSC strongly object to this more stringent requirement. Cabin interiors being offered and certified today will no longer be compliant. In order to certify cabin interiors of similar design to todays, a greater number of exits will likely need to be provided, resulting in a lower level of elegance due to such adverse effects like cabin sound levels, seat limitations, space reservations etc).

JBSC kindly request clarification from EASA if the use of current Certification Review Item (CRI) D-15 'Distance between exit' (containing the criteria 30/60ft), will remain an acceptable means to certify cabin interiors with seats in excess of the 30/45ft rule being proposed after publication into CS 25?

If the use of CRI D-15 with the 30 and 60ft criteria would not be acceptable, JBSC request the text of the NPA to be changed to address commercial and non-commercial separately.

It could be acceptable to retain 30&45ft for commercial and retain 30&60ft for non-commercial.

Furthermore, the proposed limitation would result a commercial disadvantage for EU completion centres compared with US counterparts where certain cabin arrangements could not be offered under EASA certification.

response *Partially accepted.*

See the response to comment 7: it has been clarified that the new established criteria for a seat-to-exit distance to be compatible with the intent of a uniform emergency exits distribution will be moved to the AMC, with an applicability limited to those aeroplanes for which the existing guidance (FAA AC 25.807-1) is not appropriate. This should address the concern explained in this comment.

comment *135* comment by: *Bombardier*

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NPA Reference CS 25.807(e)(2):
Each passenger seat approved for use during taxiing, take-off or landing must be located in a way that …

Comment:
A search of CS-25 indicates that the expression "such that" is more common and it is probably better suited to the requirement since the expression "in a way that" associates with a methodology (how) as opposed to a characteristic.

response *Noted.*

EASA agrees with the commentator, however, as explained in the response to comment 7, it has been decided to withdraw the proposal made in the NPA.

comment *309* comment by: *GAMA*

Page 22, CS 25.807(e)(2)
A search of CS-25 indicates that the expression "such that" is more common and it is probably better suited to the requirement since the expression "in a way that" associates with a methodology (how) as opposed to a characteristic.

response *Noted.*

See the response to comment 135.

3.2.1. Draft amendment to CS-25 — Book 1 — CS 25.812 Emergency lighting p. 23-24

comment *25* comment by: *FAA*

Page 24, CS 25.812(l)(1)

With the improvements in lighting and battery technology (LED, and Li-ion), we don't agree there is a need to allow configurations in commercial operations that perform as poorly as the proposed percentages for 10 to 19 and less than 10 seating capacity.

Limit this provision to non-commercial use

response *Not accepted.*

The proposed percentages are consistent with the percentages adopted by the FAA in the SFAR 109, Article 9(c). EASA believes that the acceptance of these lower percentages than prescribed by the current requirement CS 25.812(l)(1) cannot be based on any other consideration than the cabin size (or length). For instance, neither the type of operation (commercial or private) nor the familiarity of the passengers with their environment are believed to play a role in the ability of the passengers to find their way out in case of separation of a 6-meter-long fuselage (for instance). The current 25 % limit does not add to safety on small aeroplanes as the distance to any exit is shorter than the corresponding distance in a typical large transport category aeroplane. For such aeroplanes that require fewer emergency lights to begin with, a higher percentage of inoperative lights does not reduce the level of safety.

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	While EASA acknowledges that the improvements in technology make it easier to achieve compliance with the existing CS 25.812(l)(1), it is also believed that requiring more than necessary because the technology enables is not a valid argument when trying to establish proportionate requirements. Moreover, the multiplication of small batteries (possibly Li-ion) in cabins has recently shown not to be a safety enhancement on some aspects.

3.2.1. Draft amendment to CS-25 — Book 1 — CS 25.813 Emergency exit access and ease of operation p. 24

comment	*5* comment by: *Airbus Operations GmbH* **Airbus Comment No. 4 on:** **- CS 25.813(e) on Emergency exit access and ease of operation** **1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:** Page 24/81, paragraph (e) **2. PROPOSED TEXT / COMMENT:** The proposed text indicates: *(e) No door may be installed between any passenger seat that is occupiable for take-off nd landing and any passenger emergency exit, such that the door crosses any egress path (including aisles, cross-aisles and passageways). (See AMC 813(e))* ð **Comment:** There is a typo : should read “take-off **a**nd landing” **3. RATIONALE / REASON / JUSTIFICATION for the Comment:** Typo.
response	*Accepted.*

comment	*136* comment by: *Bombardier* **NPA Reference CS 25.813(c)(4)(i):** "or 40 cm, whichever is the least." **Comment:** The proposed text is missing imperial units. It is noted that there are many instances in the NPA where a value is given in either the metric or imperial units; unless a value is taken from a standard or specification that does not provide a conversion (as may be the case for steel balls used to test glass panels), both metric and imperial units should be provided, consistent with existing usage in CS-25.
response	*Accepted.*

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comment	*137* comment by: *Bombardier* **NPA Reference CS 25.813(e):** "No door may be installed between any passenger seat that is occupiable for take-off nd landing...." **Comment:** Typographical error. The word "and" has been misspelled but CS-25 Amendment 17 was checked and found to be correct.
response	*Accepted.*

comment	*178* comment by: *Dassault-Aviation* Dassault Aviation comment Extract AMC 25.813(e): No door may be installed between any passenger seat that is occupiable for take-off nd landing and … Comment: Typo Requested change and proposed text: No door may be installed between any passenger seat that is occupiable for take-off and landing and …
response	*Accepted.*

comment	*260* comment by: *Greenpoint Technologies* Greenpoint Technologies comment CS 25.813(e) Extract: No door may be installed between any passenger seat that is occupiable for take-off nd landing and … Comment: Typo Requested change and proposed text: No door may be installed between any passenger seat that is occupiable for take-off and landing and …
response	*Accepted.*

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comment	*310* comment by: *GAMA* **Page 24, CS 25.813(e)** "No door may be installed between any passenger seat that is occupiable for take-off nd landing and …" "…for take-off and landing and …"
response	*Accepted.*

3.2.1. Draft amendment to CS-25 — Book 1 — CS 25.1365 Electrical appliances, motors and transformers p. 25

comment	*26* comment by: *FAA* Page 25-31, General References to CS paragraphs in appendix S are assumed to be as they appear in the current version; however, with different certification bases, this could be confusing, if the paragraphs change. The FAA has been experiencing this difficulty with SFAR 109. Add guidance on applying the provisions in Appendix S to a modification to an airplane with an older certification basis.
response	*Noted.* *The determination of the applicable certification basis is ruled by Annex I to Commission Regulation (EU) No 748/2012 (Part-21, more specifically 21.A.17 and 21.A.101), and not by CS-25. Therefore, a clarification in the book 2 of CS-25 is found inappropriate to address this matter.* *In accordance with the aforementioned regulation, the new proposed Appendix S to CS-25 will primarily apply to new applications for type certificate, and possibly to new applications for significant changes to type certificate unless otherwise agreed, as soon as the reference date of application is post issuance of the amendment of CS-25 that introduced this new appendix.* *However, it was also clearly the intent of this rulemaking task (RMT.0264) to eliminate (or reduce drastically) the need for issuance of CRI in the frame of certification projects, and therefore it is expected that applicants will voluntarily elect to comply to these latest requirements irrespective of the applicable certification basis.* *EASA has identified the possible need to provide guidance on applying the provisions in Appendix S to a modification to an aeroplane with an older certification basis, and is considering issuing a Certification Memorandum to address this concern, if confirmed necessary.*

comment	*138* comment by: *Bombardier* **NPA Reference - CS 25.1365(b):**

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"The installation of galleys and cooking appliances must be such as to that it minimises the risk of overheat, or fire, smoke, burns or spilled liquids to the aeroplane, passengers and crew (See AMC 25.1365(b))."

Comment:
The requirement implies that smoke poses a significant risk.
While large quantities of smoke can certainly pose a risk to continued safe flight and landing, the presence of a comparatively small amount of smoke may be an indication of a more serious problem that is about to develop.
For this reason, the installation of a means to minimize the risk of smoke may have a detrimental effect on safety if the lack of visual indication (ie smoke) prevents occupants from recognizing that a fire is about to occur without some form of intervention.
Since there are already requirements that address flammability of aircraft systems (ie CS 25.869), the source of smoke addressed by this requirement is likely to be food or oil that has overheated. For this reason, it is proposed that the risk of smoke not be considered in the requirement.

The following is the suggested text:
(b) The installation of galleys and cooking appliances must be such as to that it minimises the risk of overheat, fire, burns or spilled liquids to the aeroplane, passengers and crew (See AMC 25.1365(b)).

Alternatively, it is suggested that the guidance be updated to indicate that the presence of a relatively small amount of smoke in the vicinity of the galley or cooking appliance is acceptable since it provides visual indication of a fire or potential fire.
It is further noted that aside from installing a means to ventilate the galley area, substantiating that the risk of smoke has been minimized is likely to be challenging since there is no guidance provided for the rate that smoke is likely to be produced or the level of risk associated with any quantity of smoke (eg would it be necessary to show compliance by test).

response *Accepted.*

comment *311* comment by: *GAMA*

Subpart F - Equipment
Page 25, CS 25.1365(b)
The requirement implies that any amount of smoke poses a significant risk.
While large quantities of smoke can certainly pose a risk to continued safe flight and landing, the presence of a comparatively small amount of smoke may be an indication of a more serious problem that is about to develop.
For this reason, the installation of a means to minimize the risk of smoke may have a detrimental effect on safety if the lack of visual indication (ie smoke) prevents occupants from recognizing that a fire is about to occur without some form of intervention.
Since there are already requirements that address flammability of aircraft systems (ie CS 25.869), the source of smoke addressed by this requirement is likely to be food or oil that has overheated. For this reason, it is proposed that the risk of smoke not be considered in the requirement.
The following is the suggested text:
“(b) The installation of galleys and cooking appliances must be such as to that it minimises

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	the risk of overheat, fire, burns or spilled liquids to the aeroplane, passengers and crew (See AMC 25.1365(b)).” Alternatively, it is suggested that the guidance be updated to indicate that the presence of a relatively small amount of smoke in the vicinity of the galley or cooking appliance is acceptable since it provides visual indication of a fire or potential fire. It is further noted that aside from installing a means to ventilate the galley area, substantiating that the risk of smoke has been minimized is likely to be challenging since there is no guidance provided for the rate that smoke is likely to be produced or the level of risk associated with any quantity of smoke (e.g. would it be necessary to show compliance by test).
response	*Accepted.*

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.1 General p. 25-26

comment	*27* comment by: *FAA* Page 26, App S, S25.1(a)(2) The term “maximum operational passenger seating configuration” needs to be defined. Define the term “maximum operational passenger seating configuration” as “the number of installed seats occupiable for takeoff and landing.”
response	*Partially accepted.* *See the response to comment 307.*
comment	*28* comment by: *FAA* Page 26, S25.1(a)(1)(ii) These criteria for non-commercially operated airplanes would allow full occupancy (110 passengers) on the 747 upper deck. We do not agree that the special provisions for private use airplanes should apply to this density of passenger seating. Apply a limiting fraction to the total occupancy allowed on a deck, such as “provided the total number of passengers does not exceed 150 per deck or ½ the TCDS maximum passenger seating capacity for that deck, whichever is less.
response	*Accepted.*
comment	*29* comment by: *FAA* Page 26, S25.1(a)(1)(ii) The FAA does not agree with the proposed maximum passenger capacity for non-commercial airplanes of 150 people per deck. That quantity of people presents challenges in light of the other relaxed provisions for non-commercial airplanes. The FAA considers a limit of 100

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passengers per deck to be appropriate for non-commercial operations.

Change the limit for non-commercial airplanes to ½ the TCDS maximum passenger seating capacity or 100 people per deck, whichever is less.

response *Not accepted.*

EASA has issued approvals for aeroplanes restricted to non-commercial operations with more than 100 passenger seats on one deck and with interior design features needing acceptance via a Special Condition (SC), ESF, deviation, etc. as covered by the subject task. However, an upper limit on the passenger configuration of such aeroplanes was considered advisable when incorporating the associated certification principles into CS-25. A limit of 150 per deck was chosen on the basis of it being slightly larger than the highest capacity of such aeroplanes approved to date. No concern related to the number of passengers has been identified during the approval of these projects. Finally, since these approvals were issued, no in-service, or other relevant feedback, has led to a need to revisit this approach.

The 150 passengers-per-deck limit, for aeroplanes limited to non-commercial operations, will therefore be retained.

comment *30* comment by: *FAA*

Page 26, S25.1(a)(2)(ii)(B)

We do not agree the 1/3 limit adds safety if exit deactivation is permitted.

The passenger limit of 1/3 should be based on the actual exit arrangement submitted for approval, which is a low density compared to what could be permitted.

response *Not accepted.*

The 1/3 limit specified by S25.1(a)(2)(ii)(B) is the criteria to meet the new 'low occupancy aeroplane' category and was chosen as a powerful and pragmatic discriminant in order to prevent all but a few aeroplanes designed for scheduled commercial operations utilising the provisions of the new Appendix S. This meets the intent of the new requirements, i.e. that they will only apply to interior configurations that have traditionally been the subject of the special conditions, equivalent safety findings and deviations that are now formalised in Appendix S.

This discriminant results in a very generous surfeit of emergency exits when all remain operative. It was not considered necessary or appropriate to retain this degree of surfeit when emergency exits are deactivated. However, appreciable limitations are still set for the number of passengers and their location during taxi, take-off, and landing for low occupancy aeroplanes with deactivated emergency exits.

comment *128* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

In various paragraphs, EASA added to the phases of flight to which certain requirements apply so that they now encompass "approach" in addition to the typical "taxi, takeoff, and landing" phases specified in other requirements and in similar requirements by other airworthiness authorities. The draft AMC to S25.20(b) indicates that EASA's intent is for the

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alert (in this specific case) to be activated during descent. Embraer is unaware of any difficulties in the use of the current requirement, and this is only really pertinent in the event that cabin occupants fail to take the proper action (opening the cabin door, or restowing a deployable item that causes an obstruction in front of an exit, for example) prior to the cockpit alert point. Accordingly, Embraer believes the current requirement and implementation is adequate without expanding the affected requirements to encompass the descent phase of flight.

response

Not accepted.

The set of mitigations required in order to allow for cabin interior doors (or in-flight obstructions of type III or IV emergency exits other than minor) are to be considered as a whole and not in isolation, and obey to a scenario-based logic. The fundamental assumption in recognising that the level of safety as specified in the essential requirements of Annex I to Regulation (EC) No 216/2008 has been maintained is that there is sufficient confidence that the obstruction in the egress path will be removed before entering the critical phases of flights (take-off and landing). If this is ensured with an alerting system, it should allow sufficient time for occupants (crew and/or passenger) to act in all probable circumstances and conditions. With regard to the actions to be performed by the crew, it shall also account for the crew workload, which shall be assessed in accordance with the requirements of CS 25.1523 and CS 25.1302. For this reason, it is believed that triggering the alert during the approach phase would not allow for sufficient time to restore the readiness of the cabin before landing.

comment

139 comment by: *Bombardier*

NPA Reference S25.1(a)(2):
(2) low-occupancy aeroplanes irrespective of the type of operations (commercial or non-commercial); a low-occupancy aeroplane is defined as an aeroplane which has a maximum operational passenger seating configuration of:
(i) up to and including 19; or
(ii) up to and including one third of the approved maximum passenger seating capacity of the type-certified aeroplane as indicated in the aeroplane TCDS, provided that …

Comment:
The expression “maximum operational passenger seating configuration” is used throughout the NPA in lieu of “approved maximum passenger capacity”.

The use of the word “configuration” can be misinterpreted to mean that low occupancy airplanes are defined by the number of seats approved for use for taxi, takeoff and landing as opposed to their “approved passenger capacity” which can be less if excess seats are installed.

While it is true that the “configuration” of an aeroplane includes the limitations expressed in the AFM and on the placard required per S25.40(c)(1), the choice of word may be confusing.

The following is the revised suggested text:
(2) low-occupancy aeroplanes irrespective of the type of operations (commercial or non-commercial); a low-occupancy aeroplane is defined as an aeroplane which has an approved passenger capacity:

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(i) up to and including 19; or
(ii) up to and including one third of the approved maximum passenger seating capacity of the type-certified aeroplane as indicated in the aeroplane TCDS, provided that …

It is noted that the first paragraph of AMC to Appendix S, S25.10(b) includes the suggested text.

response *Partially accepted.*

See the response to comment 307.

comment *232* comment by: *LHT DO*

S25.1 (a)(2)

LHT proposes to only apply the one-third requirement to the whole deck, not evaluating every zone between pairs of emergency exits separately.

Otherwise the complete aircraft could lose its classification as low occupancy airplane due to the seating arrangement in one single zone in which the 1/3 rule is exceeded.

An aircraft with an cabin arrangement where the maximum operational passenger seating configuration does not exceed one-third of the sum of the passenger seat allowances, falls obviously in the kind of category aircraft (VIP, executive) that is to be addressed with this NPA.

In addition to the above, it has to be recognized that adequate cabin safety requirements are in place and evacuation performance as to be substantiated for certification anyway, an adequate level of safety is maintained.

response *Not accepted.*

See the response to comment 2.

comment *304* comment by: *Dassault-Aviation*

Dassault Aviation comment:

Comment:
In several places, the appendix S requirements begin with "for low-occupancy aeroplanes...,and non-commercially operated aeroplanes..."
Several readers have misinterpreted this sentence as defining the applicability to airplanes that are both low occupancy and private transport. To make the sentence clearer, it is recommanded to duplicate the word "for".

Requested change and proposed text:
“for low-occupancy aeroplanes …., and for non-commercially operated aeroplanes …”

response *Accepted.*

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3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.10 General Cabin Arrangement p. 26-27

comment	*15* comment by: *LHT DO* S25.10(a)(1)-(4): replace "either side" or "either direction" by "both side" or "both direction"
response	*Noted.* *The subject paragraphs have been changed accordingly.*

comment	*50* comment by: *Andrew Hanley (Jet Aviation)* S25.10(a)(1) & 25.10(a)(4) "…either side…" can be read as one side **or** the other, resulting in interpretation to install a placard on only one side. Suggested text change: …**both sides**…
response	*Noted.* *See the response to comment 15*

comment	*51* comment by: *Andrew Hanley (Jet Aviation)* S25.10(a)(2) "…either direction…" can be read as one direction **or** the other, resulting in interpretation to be frangible in only one direction. Suggested text change: …**both directions**;
response	*Noted.* *See the response to comment 15*

comment	*140* comment by: *Bombardier* **NPA Reference S25.10(a)(2):**

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(2) the door must be frangible (or equivalent, e.g. it has a removable panel) in either direction;

Comment:
The use of the words “either direction” implies that the door must be frangible in one direction but not the other (ie either X or Y). It is presumed that the door should be frangible in both directions to account for the fact there may be emergency exits on both sides of the door or in case a compartment must be broken in to.

The following is the suggested revised text:
(2) the door must be frangible (or equivalent, e.g. it has a removable panel) in both directions;

response

Noted.

See the response to comment 15

comment

141 comment by: *Bombardier*

NPA Reference S25.10(a)(4):
the door must be operable from either side and if a latch is installed to restrain the door in the closed position, it must be capable of being unlatched from either side without the aid of any tool;

Comment:
The use of the words “either side” implies that the door must be operable or capability of being unlatched from one side but not the other (ie either X or Y).

The following is the suggested revised text:
"the door must be operable from both sides and if a latch is installed to restrain the door in the closed position, it must be capable of being unlatched from both sides without the aid of any tool;"

response

Noted.

See the response to comment 15

comment

142 comment by: *Bombardier*

NPA Reference S25.10(a)(6):
"the AFM must include a limitation requiring a pre-flight passenger briefing containing instructions on the operation of the door, including frangibility features."

Comment:
The use of the word “limitation” implies that the information must be included in the Limitations section of the AFM.
It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2).
Also, it should be explicit that instructions on operation of the door must include the requirement that the door be secured open for taxi, takeoff and landing.

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The following is the suggested revised text:
"operation of the door, including frangibility features and the requirement that the door be secured open for taxi, takeoff and landing, must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM."

response *Accepted.*

S25.10 has been revised, and no longer refers to a limitation in the AFM being required.

comment *179* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS 25.10(a)(1):
the door must be placarded on either side to be in the open position …

Comment:
Clarity: "either side" may be understood as requiring a placard on one side only.

Requested change and proposed text:
the door must be placarded on both sides to be in the open position …

response *Noted.*

See the response to comment 15

comment *180* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.10(a)(2):
... either direction …

Comment:
Clarity: "either direction" may be understood as applicable to one direction only.

Requested change and proposed text:
… both directions …

response *Noted.*
See the response to comment 15

comment *181* comment by: *Dassault-Aviation*

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Dassault Aviation comment

Extract CS25.10(a)(4):

... either side …

Comment:
Clarity: "either side" may be understood as applicable to one side only.

Requested change and proposed text:

… both sides …

response *Noted.*

See the response to comment 15

comment *228* comment by: *sabena technics BOD*

The S25.10(a) is not fully harmonized with article 10 of SFAR 109. The SFAR 109 article 10(d) "**Doors installed across a longitudinal aisle must translate laterally to open and close, e.g., pocket doors"** is not called in S25.10(a). Practically, our executive interior EASA STC using "classic" doors across aisle has not been accepted by FAA because invoquing the article 10(d).
There should be a common EASA-FAA position for the design of the doors across the aisles.

response *Not accepted.*

This difference is acknowledged and is in line with the position taken in previous EASA (and predecessor European NAA) approvals. EASA has concluded that, in this case, there is no need to align with the more stringent FAA standard.

comment *261* comment by: *Greenpoint Technologies*

Greenpoint Technologies Comment

CS 25.10(a)(1)
Extract:
the door must be placarded on either side to be in the open position …

Comment:
Clarity: "either side" may be understood as requiring a placard on one side only.

Requested change and proposed text:
the door must be placarded on both sides to be in the open position …

response *Noted.*

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See the response to comment 15.

comment 263 comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(a)(2)
Extract:
... either side …

Comment:
Clarity: "either side" may be understood as applicable to one side only.

Requested change and proposed text:
… both sides …

response *Noted.*

See the response to comment 15.

comment 264 comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(a)(4)
Extract:
... either side …

Comment:
Clarity: "either side" may be understood as applicable to one side only.

Requested change and proposed text:
… both sides …

response *Noted.*

See the response to comment 15.

comment 312 comment by: *GAMA*

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Page 26, S25.1(a)(2)
The expression “maximum operational passenger seating configuration” is used throughout the NPA in lieu of “approved maximum passenger capacity”.

The use of the word “configuration” can be misinterpreted to mean that low occupancy airplanes are defined by the number of seats approved for use for taxi, takeoff and landing as opposed to their “approved passenger capacity” which can be less if excess seats are installed.

While it is true that the “configuration” of an aeroplane includes the limitations expressed in the AFM and on the placard required per S25.40(c)(1), the choice of word may be confusing.

The following is the suggested text:
(2) low-occupancy aeroplanes irrespective of the type of operations (commercial or non-commercial); a low-occupancy aeroplane is defined as an aeroplane which has an approved passenger capacity:
(i) up to and including 19; or
(ii) up to and including one third of the approved maximum passenger seating capacity of the type-certified aeroplane as indicated in the aeroplane TCDS, provided that …

It is noted that the first paragraph of AMC to Appendix S, S25.10(b) includes the suggested text.

Page 26, S25.10(general)
There may be the need to define "passenger cabin" as it relates to interior doors. It should clarify if this would include any place in the fuselage other than the flight deck or is this just the area where occupants can be seated for taxi, takeoff, and landing. For some airplane layouts, this can have a significant impact to the design and layouts for the doors. Also, some operators switch between commercial and non-commercial on different legs of flights.

Page 26, S25.10(a)(1)
The use of the words “either side” implies that the door must be placarded on one side but not the other (i.e. either X or Y).

The following is the suggested text:
“(1) the door must be placarded on both sides to be in the open position during taxiing, take-off and landing;”

Page 26, S25.10(a)(2)
The use of the words “either direction” implies that the door must be frangible in one direction but not the other (ie either X or Y). It is presumed that the door should be frangible in both directions to account for the fact there may be emergency exits on both sides of the door or in case a compartment must be broken in to.

The following is the suggested text:
“(2) the door must be frangible (or equivalent, e.g. it has a removable panel) in both directions;”

Page 26, S25.10(a)(4)
The use of the words “either side” implies that the door must be operable or capability of

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being unlatched from one side but not the other (ie either X or Y).

The following is the suggested text:
"(4) the door must be operable from both sides and if a latch is installed to restrain the door in the closed position, it must be capable of being unlatched from both sides without the aid of any tool;"

response

Page 26, S25.1(a)(2): Partially accepted.

See the response to comment 307.

Page 26, S25.10(general): Noted. This section has been reworded, removing the need to define the passenger cabin.

The requirements S25.10(a) and (b) have been reworded without mention of the passenger cabin, to be consistent with requirement 25.813(e).

Page 26, S25.10(a)(1), (2) and (4): Noted. See the response to comment 15.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.10 General Cabin Arrangement (b) p. 27-28

comment

12 comment by: *Airbus Operations GmbH*

Airbus Comment No. 5 on:
- S25.10(b) on Interior Doors on Commercially Operated Aeroplanes

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 27/81, paragraph (b)(6)(iv)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(b) Interior Doors on Commercially Operated Aeroplanes (See AMC to Appendix S, S25.10(b)): A total of one door may be installed in the passenger cabin of a low-occupancy aeroplane having a maximum operational passenger seating configuration of 19 or less, (…), provided that in lieu of the requirements of CS 25.813(e), the following requirements are met:
(..)
(6) the door and its operating system is designed such that:
(…)
(iv) closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for maintenance purposes;

Comment:

This text proposal excludes possibility to operate such interior door in other operational ground phase such as "boarding" the aeroplane. In many operational situation, there is an obvious interest in keeping the capability to operate such door if installed, and this should be allowed.

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Airbus suggests clarifying that "*closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for pre/post taxiing phases, or maintenance purposes;*"

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Allow closing doors when flight has not started.
Interior doors are one of the most coveted feature onboard executive / VIP aeroplanes. If installed, such doors may be operable in non-safety related cases because of their influence on the comfort of the passengers (privacy, noise, temperature, and aesthetics).

response *Accepted.*

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner, such that there is no longer a prohibition regarding an interior door being closed when the aeroplane is on the ground.

comment *16* comment by: *LHT DO*

There seems no obvious reason the exclude low-occupancy configurations as defined in S25.1.(2)(ii) when all further requirements of S25.10(b) are complied with.

Cabin configurations with reduced passenger capacity (up to 1/3 of originally approved capacity) will be less affected in regard to evacuation capability by a single interior door than an aircraft being designed initially for 19 passengers, for which the seating capacity has not been reduced compared to the approved maximum passenger seating capacity of the type-certified aeroplane as indicated in the aeroplane TCDS.

Limit should be based on demonstrated evacuation performance, not an empiric passenger limit, without taking into account additional benefits of low-occupancy aircraft configurations.

EASA should reconsider allowing interior doors on commercially operated aircraft to full definition of low-occupancy aircraft. EASA is kindly requested to provide rationale the defined limitation.

response *Not accepted.*

Paragraph 6.3 of the NPA 2015-19 provides the rationale for not extending the applicability of the new requirement S25.10(b) to all low occupancy aeroplanes.

comment *21* comment by: *LHT DO*

S25.10(b)(6)(ii): : Crew procedures in lieu of automated opening should also be acceptable. As the flight crew is informed about open doors (see S25.10(b)(8)) a crew procedure could be placed in order.

response *Partially accepted.*

A crew procedure is not believed to be equivalent to an automated opening, at least from a

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	crew workload standpoint. However, EASA acknowledges that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner, and, for configuring the cabin for take-off and landing, the AMC now outlines different means of compliance: purely design solutions (automating), purely procedural solutions (cabin crew) and mixed (design and procedure) solutions (remote control activated by procedure by the crew).
comment	*22* comment by: *LHT DO* S25.10(b)(6)(iv): EASA is kindly requested to consider allowing closing interior doors on ground as long as the aircraft is at the parking position.
response	*Partially accepted.* *See the response to comment 12.*
comment	*31* comment by: *FAA* Page 27, S25.10(b) The FAA does not agree with the provision for interior doors being applied to potentially very large airplanes, even though the passenger count is limited to 19. Change the applicability of S25.10(b) to airplanes with a TCDS maximum passenger capacity of 19.
response	*Not accepted.* *It is believed that the size of the aeroplane does not play any role in the justification of an acceptable level of safety for this feature. The only possible impact is on the number of such doors to be installed in the cabin, which is possibly higher on a larger cabin. However, this has been addressed in the new proposed text by ensuring that any passenger will have direct access to at least one emergency exit on one side of the fuselage, and not have to go through more than one door to access one emergency exit on the other side of the fuselage.* *See also the response to comment 11.*
comment	*32* comment by: *FAA* Page 27, S25.10(b) A significant concern is that the door might not jam in the fully closed position. Require that frangibility be demonstrated from any partially closed position that prevents passage.
response	*Partially accepted.* *In the new proposed text, it is required to ensure that in the case of any probable failure or jamming of the door in a position other than fully open (possibly in a partially closed*

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position), any occupant is able to restore a sufficient opening to pass through the doorway. The new proposed AMC clarifies that the case of probable jamming in a non-fully-closed position should be considered in the frangibility demonstration.

comment *33* comment by: *FAA*

Page 27, S25.10(b)

Guidance concerning the probability assessment will be needed.

Add guidance on performing a probability analysis for combined failure of the internal door and emergency exit.

response *Partially accepted.*

It is acknowledged that the requirement on the probability assessment as initially stated would have needed more guidance. The text has been reworded in a less prescriptive manner, since assessment of the combined failure of the internal door and emergency exit is no longer required.

comment *34* comment by: *FAA*

Page 27, S25.10(b)

The concept of a lavatory with a seat that is approved for TT&L is not addressed when considering the allowance of the door. The provision for interior doors in commercial use, as currently written, will drive the aft emergency exit into the lavatory for airplanes with only one forward and one aft exit, so manufacturers can have a TT&L occupied lavatory with a door on it. We are concerned that passenger recognition of the location of the exit is not as high when the exit is located in the lavatory instead of the cabin.

Consider altering the requirements to maintain an incentive for the aft emergency exit being located in the cabin area where it will be more accessible and easier for passengers to locate in an emergency.

response *Noted.*

The point raised by this comment is understood. Nonetheless, after careful consideration, EASA has concluded that the proposal can remain unchanged due to the fact that passenger recognition of the location of the exit will be sufficiently high. Furthermore, it is to be noted that the assurance that such a door is secured open before taxi, take-off and landing cannot rely on passenger action.

comment *52* comment by: *Andrew Hanley (Jet Aviation)*

This paragraph represents alleviation for airplanes certified to CS 25.813(e) at amdt 12 or later. However, it is significantly more stringent than CS 25.813(e) prior to amendment 12.

JBSC request EASA to clarify/confirm that in case of voluntary compliance to appendix S for an airplane certified to CS 25 prior to Amdt 12, EASA does not intend to make this § CS

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S25.10(b) applicable. Otherwise, the target of appendix S would be missed for those airplanes, as no voluntary compliance to appendix S would be applied for.

response *Noted.*

See the response to comment 127.

comment *53* comment by: *Andrew Hanley (Jet Aviation)*

What is the rational for limiting to aeroplanes with less than 19 passengers? Low occupancy aeroplanes with more than 19 passengers will be required to have more than one exit per side, therefore arguably providing improved exit capabilities. For example, an exit on each side could be available to passengers without needing to pass through the interior door at all on aircraft with more than one exit per side.

response *Not accepted.*

See the response to comment 16.

comment *54* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

S25.10(b) page 27

The NPA text proposes to give criteria for the acceptance of one door on commercially operated aeroplanes.
So far, no doors between passenger compartments have been accepted for commercially operated aeroplanes and the EAS CRI stated the following:
“Considering the differences between private and commercial operations, EASA has in the past issued deviations, with certain restrictions, for non-commercial used airplanes allowing doors as described above.
In particular, non-commercial aeroplanes usually transport a limited number of passengers that are likely to be familiar with the specific layout of the cabin and with the safety features of each isolated compartment.”

The following arguments are against the proposed paragraph:
- Although the proposed requirement includes some more stringent requirements than S25.10(a), it remains that the design has some uncommon specific features, that it can fail and then require actions by a crew member of passenger, that it may need to be opened in-flight,
- S25.30 allows the width of aisle to be reduced to 0 m (which is what a door is doing) during in-flight operation only for non-commercial operation. So S25.10(b) and S25.30 are inconsistent,
- For commercially operated aeroplanes, it cannot be argued that the passengers are likely to be familiar with the specific layout of the cabin and with the safety features of each isolated

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compartment.

Therefore, S25.10(b) should be deleted.

response

Not accepted.

S25.30 allows the width of the aisle to be reduced to 0 m during in-flight operation for a non-commercially operated aeroplane as well as for a low occupancy aeroplane with a passenger seating configuration of 19 or less irrespective of the type of operation (see the response to comment 304). The requirement S25.20(b) has the same applicability and allows for in-flight obstructions (other than minor) of type III and IV emergency exits. Appendix S requirements are believed to be overall consistent.

See also response to comment 11.

comment

55 comment by: *Andrew Hanley (Jet Aviation)*

(b)(1)

The compensating features requested under S25.20(b) ensure that an exit obstruction is either assured to be removed or has been shown to be as effective as an unobstructed exit. Therefore the limitation that the provisions of S25.20(b) are not to be used is excessively restrictive.

Suggest to remove this limitation as it is overly restrictive.

response

Accepted.

EASA concurs that it is not necessary to restrict the use of the new provision S25.10(b) to cabin layouts that do not benefit from the new provision S25.20(b) for the following reasons:

- *It is not relevant to, and totally independent from, the whole reasoning to establish that each of these new provisions independently ensure a level of safety as intended in Annex 1 of the Basic Regulation.*
- *There is no expected common mode between a failure of the interior door and a failure of the deployable item obstructing an emergency exit.*
- *There is no adverse in-service experience related to the current cabin interior door installations on business aeroplanes, which could suggest that an unsafe condition might exist or develop when it is combined on the same cabin floorplan according to the new provision S25.20(b).*

comment

57 comment by: *Andrew Hanley (Jet Aviation)*

(6)(iv)

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This is unnecessarily restrictive. Should be acceptable not only for on the ground for maintenance, but should also include other ground phases, such as parked, passenger boarding etc. This has no safety impact.

Suggested text change:
(iv)closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases.~~, or on ground for maintenance purposes;~~

response *Partially accepted.*

See the response to comment 12.

comment *58* comment by: *Andrew Hanley (Jet Aviation)*

(b)(7)

It is understood this requirement is consistent with CS 25.783(b)(2) which requires that failures that would prevent opening of any exit after landing must not be more probable than remote. This requirement 25.783(b)(2) is applicable to an exit which incorporates no frangibility feature, which means that the opening of the exit is the ultimate possibility to escape through this exit.

Clarification:
Similarly, it is expected that CS S25.10(b)(7) applies considering the ultimate possibilities of using the escape path, and consequently taking credit of the door frangibility.

response *Accepted.*

Some conditions that participate to the same fundamental objective (for instance: addressing the risk of failure or jamming of the door) have been highlighted by other commentators as being potentially not only redundant but sometimes contradictory in their design implementation.
For instance, the requirement on the expected reliability of the door opening system was meant to be consistent with CS 25.783(b)(2) which requires that failures that would prevent opening of any exit after landing must not be more probable than remote. However, it is indeed acknowledged that CS 25.783(b)(2) is applicable to an exit which incorporates no frangibility feature or no other ultimate possibility of using the escape path.
In the same manner, the requirement for a minimum opening width of 15" after single failure is redundant with the frangibility requirement.
Therefore, the text of the requirement has been rewritten in a less prescriptive manner and the reliability requirement has been replaced with the need to demonstrate the restoration of a minimum escape path for any probable failure; the choice of 'probable' failure (as per AMC

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	to CS 25.1309) is consistent with an objective of 'remote' for the total obstruction of the escape path.
comment	*129* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* Embraer strongly supports the proposal to allow cabin doors in airplanes operated in commercial service, and we appreciate EASA's consideration of this need.
response	*Noted*. *EASA appreciates the support of Embraer.*
comment	*130* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* (6)(ii) - There are sufficient redundant features required in other paragraphs to adequately ensure the cabin door will be placed in the stowed position for taxi, takeoff, and landing such that a requirement for automatic opening of the door is unnecessary. Cabin doors have been a common installation in executive interiors for years and Embraer is unaware of any accident or incident that indicates that the existing provisions are not adequate for cabin doors, even in commercial use.
response	*Partially accepted.* *See the response to comment 21.*
comment	*131* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* (6)(iv) - This requirement would not allow a cabin door to be closed while on the ground prior to departure (unless in maintenance). It is common to want to close forward cabin doors before taxi for reasons of noise, temperature control, or privacy, and there is no safety justification to prevent this type use. Since S25.10 (b)(6)(ii) already specifies when the cabin door must be open, Embraer believes that another paragraph to describe when it may be closed is redundant and should be removed.
response	*Partially accepted.* *See the response to comment 12.*
comment	*132* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* (6)(v) - The requirement for any single failure (regardless of probability) of the closing/latching mechanism to result in an open door is overly restrictive and likely impossible to comply. Any single jam to the mechanical actuation system with the door in the closed position would likely not allow the door to open. We acknowledge that this requirement is very similar to some special conditions that have been previously issued, and with which some designs have supposedly shown compliance. Embraer believes that this requirement is overly conservative (especially when compared with the requirements of CS

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	25.783 for fuselage doors that are normally closed and obviously lack frangibility features). Embraer believes a more practical requirement would be that "no probable failure can impede the opening of the door."
response	*Partially accepted.* *See the response to comment 58.*

comment	*133* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* (6)(vi) - The 15-inch wide opening requirement after single failure implies that the door would have to be a minimum of 30 inches wide. This size door would be too big to practically fit in many interior configurations. Given the fact that a single failure, combined with the probability of an accident, is approaching extremely improbable, this condition is overly conservative considering that placards, annunciations, and briefing serve to minimize the chances the door would be closed and that the frangibility features still provide adequate access to the emergency exits. Embraer recommends removing this requirement.
response	*Partially accepted.* *See the response to comment 58.*

comment	*143* comment by: *Bombardier* **NPA Reference S25.10(b):** Interior Doors on Commercially Operated Aeroplanes (See AMC to Appendix S, S25.10(b)): A total of one door may be installed in the passenger cabin of a low-occupancy aeroplane … **Comment:** Bombardier believes that for each type of airplane there will be a practical limit to the number of interior doors that can be installed but that the installation of multiple doors should be permitted. Whereas S25.10(a) specifies requirements applicable to non-commercially operated airplanes that are consistent with SFAR 109 and previously granted exemptions / deviations, it is our belief that there is sufficient experience with the design and certification of interior door systems to define a set of requirements that results in negligible reduction in safety margins (ie equivalent safety), in which case it should be possible to install more than one interior door. The following factors are especially relevant: FAA and EASA have been able to establish requirements for interior doors on "mini-suites" of wide body airplanes Concerns that the installation of interior doors might have an adverse effect on passengers being able to locate emergency exits is not consistent with the fact that multiple features are required to ensure doors are open for takeoff & landing whereas curtains only require a placard There are multiple design features proposed that ensure (1) that doors are open for takeoff & landing, (2) doors will stay open in the event of door system failure or crash landing and (3) in the unlikely event a door is fully or partially obstructing egress, it can be opened or broken through

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It is suggested that there not be any limit on the number of interior doors installed on an aircraft and that instead, if deemed necessary, there be a limit on the number of doors that a passenger is permitted to pass through to reach an emergency exit (refer to Bombardier comment on S25(10)(b)(2)).

response

Partially accepted.

Comparison with mini-suites is deemed to be not relevant because of the number of passengers that would be affected by a door failing to open.
However, it is acknowledged that limiting the number of doors was too prescriptive and the text of the requirement has been amended. The principle of the alternative proposed by the commentator has been retained, such that it is not required to ensure that any passenger would have direct access to at least one emergency exit on one side of the fuselage, and not have to go through more than one door to access one emergency exit on the other side of the fuselage.

comment

144 comment by: *Bombardier*

NPA Reference s25.10(b)(2):
the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains;

Comment:
As suggested above, this is too restrictive.

If a door is open, it is not possible for the door to close and even were it to somehow close it will still be possible to open it or break through it; therefore, there is no rational explanation why occupants cannot pass through a door to reach any exit.

It is acknowledged that increasing the number of dividers between a seated occupant and an emergency exit, regardless of whether each of the dividers incorporates a door, curtain or no means to “isolate” one compartment from the other, can have an adverse effect on the capability of the occupant to recognize the location of an emergency exit. This will be especially true in the case where the airplane is so wide as to not have a single aisle down the middle that interconnects each of the compartments. For that reason, it is sensible that an occupant not have to pass through more than one doorway to reach an exit or the main aisle. Likewise, the occupant should not have to pass through more than two doorways to reach an alternative exit once they have reached an exit.

It is our belief that in consideration of all of the other requirements that assure doors will not prevent an occupant from reaching an emergency exit, this is a more reasoned approach than limiting the airplane to a single door.

The following is the suggested revised text:
(2) the door is at a location such that:
(i) for each seat that can be occupied by a passenger during takeoff and landing, there is an egress path that involves movement through no more than one door; and
(ii) for each emergency exit location, the path to reach any other emergency exit

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	location involves movement through no more than two doors;
response	*Partially accepted.* *See the response to comment 143.*

comment	*145* comment by: *Bombardier* **NPA Reference s25.10(b)(3):** the door is clearly placarded on either side to be in the safe (i.e. open and secured) position during taxiing, take-off and landing **Comment:** The use of the words "either side" implies that the door must be placarded on one side but not the other (ie either X or Y). The following is the suggested revised text: *(3) the door must be placarded on both sides to be in the safe (i.e. open and secured) position during taxiing, take-off and landing;*
response	*Accepted.* *See the response to comment 184*

comment	*146* comment by: *Bombardier* **NPA Comment s25.10(b)(5):** the door is frangible (or equivalent, e.g. it has a removable panel) in either direction and is clearly placarded on both sides to indicate this feature; **Comment:** The use of the words "either direction" implies that the door must be frangible in one direction but not the other (ie either X or Y). It is presumed that the door should be frangible in both directions to account for the fact there may be emergency exits on both sides of the door or in case a compartment must be broken in to. The following is the suggested revised text: *(5) the door must be frangible (or equivalent, e.g. it has a removable panel) in both directions;*
response	*Accepted.* *See the response to comment 184*

comment	*147* comment by: *Bombardier* **NPA Reference S25.10(b)(6)(i):** the door is easily operable from either side; **Comment:** The word "easily" is not necessary since it is considered to be inconceivable that any interior

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door design would include a means for operating the door that is complex.

Also, the use of the words “either side” implies that the door must be operable or capability of being unlatched from one side but not the other (ie either X or Y).
The requirement should be harmonized with S25.10(a)(4) except that the door cannot incorporate a means to latch the door closed.

The following is the suggested revised text:
(i) the door must be operable from both sides;

response *Accepted.*

See the response to comment 184.

comment *148* comment by: *Bombardier*

NPA Reference S25.10(b)(6)(ii):
it opens automatically, or stays open, and remains secured in the open position when the aeroplane enters any of the following flight phases: taxiing, take-off, approach and landing; the automatic opening, and retention in the open and secured position, must function following complete loss of normal electrical power;

Comment:
It is not clear that EASA has completed a complete risk analysis on the impact this might have on flight safety. For example, will pilot’s knowledge that configuring the airplane for landing cause the interior doors to open influence when the pilot lowers flaps?

In lieu of having doors that open automatically, Bombardier proposes to have a switch in the cockpit that provides the crew with a means to open the doors for takeoff or landing if they have not already been opened.

The following is the suggested revised text:
(ii) there must be a means to allow the pilots to open the door without leaving their seats;

response *Partially accepted.*

See the response to comment 21.

comment *149* comment by: *Bombardier*

NPA Reference S25.10(b)(6)(ii):
it opens automatically, or stays open, and remains secured in the open position when the aeroplane enters any of the following flight phases: taxiing, take-off, approach and landing; the automatic opening, and retention in the open and secured position, must function following complete loss of normal electrical power;

Comment:
Bombardier considers it reasonable that the loss of normal power should cause interior doors to open automatically.

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That being said, to require that any automatic opening feature (which Bombardier opposes per the previous comment on S25.10(b)(6)(ii)) function after loss of normal power implies a far higher criticality for the interface with other aircraft systems than can be supported by failure hazard analysis (ie the loss of normal power to the landing gear and flap control units would also have to be considered although it is unlikely that maintaining normal control of interior doors could ever be considered to be critical at the aircraft level).

The following is the suggested revised text of S25.10(b)(6)(v) where S25.10(b)(6)(ii) has already been modified per the previous comment on S25.10(b)(6)(ii) (refer also to the Bombardier comment on the failure modes of S25.10(b)(6)(v)):
(v) it opens automatically, or stays open, and remains secured in the open position after loss of electrical power;

response

Partially accepted.

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner. The revised requirement no longer presents the issue raised by this comment.

comment *150* comment by: *Bombardier*

NPA Reference S25.10(b)(6)(iv):
closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for maintenance purposes;

Comment:
This position is considered to be overly restrictive.

The ability to close the door while the aircraft is parked on the ground is required for multiple reasons including privacy, cabin temperature control in very hot or cold environments, minimization of noise when aircraft engines are operating, etc.

If it is not possible to delete this requirement altogether, we suggest the following revised text:
closing of the door is only possible when the aeroplane is outside of the taxiing, takeoff, approach and landing flight phases, or on ground if the flight crew determines that closing of the door is acceptable;

response

Partially accepted.

See the response to comment 12.

comment *151* comment by: *Bombardier*

NPA Reference S25.10(b)(6)(v):
following any single failure of the closing/latching mechanism, the door will default to the fully open and secured position; and

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Comment:
The expression “closing/latching mechanism” is not clear.

The word latch in S25.10(a)(4) refers to a means to latch the door in the closed position so as to prevent the door from being opened from the other side, as would typically be found on a lavatory door.

However, it is understood that a means to latch a door between passenger seats and an emergency exit to prevent it from being opened from the other side is not acceptable per S25.10(b).

While the expression closing mechanism may have meaning in the case where a door is motorized, that does not appear to be the meaning in this case.

It is believed that the expression “closing/latching mechanism” refers to the mechanism that holds the door in the closed position after it has been closed manually or by a motorized mechanism; if this is the case then the expression *“mechanism that holds the door in the closed position”* is suggested.

response

Partially accepted.

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner. The revised requirement no longer presents the issue raised by this comment.

comment *152* comment by: *Bombardier*

NPA Reference S25.10(b)(6)(v):
following any single failure of the closing/latching mechanism, the door will default to the fully open and secured position; and

Comment:
It is our belief that it is not possible to comply with this requirement notwithstanding the fact that the requirement is almost identical to one of the conditions included in FAA exemption number 10188. In particular, given the need for electronic/electric control of the door closing/latching system to meet other requirements, there are surely hidden failure conditions that will exist for which the door will not default to the fully open and secured position. Uploaded file “Failure Analysis of Simplified Interior Door Design” illustrates this. Unless the intent of this requirement is completely misunderstood (see previous Bombardier comment on S25.10(b)(6)(vi)), then it is our belief that it is not possible to comply with this requirement notwithstanding the fact that the requirement is almost identical to one of the conditions included in FAA exemption number 10188.

It is proposed that the failure condition of concern, presumed to be loss of normal electrical power supply, be addressed directly and that other failure conditions be accounted for when substantiating compliance with S25.10(b)(7).

The following is the suggested revised text (refer also to Bombardier comment on S25.10(b)(6)(ii)):
(v) it opens automatically, or stays open, and remains secured in the open position after

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loss of electrical power;
Furthermore, additional failure modes can be addressed by including a requirement for manual override of the door mechanism that is independent of the feature(s) that provide for frangibility of the door.
This would be consistent with FAA exemption 10781 that provided for the installation of doors on mini-suites of commercially operated Boeing 747-8 aircraft.

The following is the suggested revised text of an additional requirement that replaces S25.10(b)(6)(vi) per Bombardier comments on S25.10(b)(6)(vi):
(vi) the door must be designed so that it can be manually opened with 25 pounds force or less, regardless of power failure conditions;

response

Partially accepted.

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner. The revised requirement no longer presents the issue raised by this comment.

comment

153 comment by: *Bombardier*

Reference NPA S25.10(b)(6)(vi):
following any single failure, the remaining functional elements will provide an opening from floor to ceiling at least 15 inches wide;

Comment:
The intent of this requirement is not entirely clear:

Are the “remaining functional elements” design features that allow partial operation of the door or does this expression consider the frangibility feature(s) to be a “remaining functional element”?

What about a manual override mechanism that allows the door to stow normally but ignores the possibility that the tracking mechanism could jam?

There are some obvious design solutions that comply with this requirement but which would have substantial effect on weight and possibly cabin configuration; these include the following:
multiple independent mechanisms each of which provides the capability to partially stow a single door panel
multiple door panels with independent mechanisms

While having redundant mechanisms would reduce the probability that a failure condition will render the door completely unusable, that an inoperable door has minor effect on safety during emergency egress (recall that the frangible features would remain functional) and no effect on safety at all other times has been largely ignored.

Since this requirement is not clear, may have a substantial effect on weight and/or cabin layout and is consistent with a criticality not supported by a hazard analysis when the door considered as a part of an emergency egress system, it is recommended that this

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requirement be eliminated in its entirety.

It is noteworthy that this requirement, more than any other, would likely necessitate the development of separate design solutions for non-commercially and commercially operated airplanes, which is highly undesirable due to added cost and complexity.

response

Partially accepted.

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner. The revised requirement no longer presents the issue raised by this comment.

See also the response to comment 58.

comment

154 comment by: *Bombardier*

Reference NPA S25.10(b)(6)(vi):
following any single failure, the remaining functional elements will provide an opening from floor to ceiling at least 15 inches wide;

Comment:
If retained, the requirement for an opening 15 inches wide needs to be better understood; for a typical business jet, this will be more than half the width of the door.

Bombardier believes that a minimum opening should be assured (the Bombardier comment on AMC S25.10(b) discusses the frangibility requirement and the need to consider cases where the door is partially stowed), but the size of the opening should be based on anthropometric data and not arbitrarily selected and validated by tests with 95th percentile male subjects.

For example, the size of the opening could be based on a 95th percentile male passing through the opening sideways:

It is noted that per MIL-STD-1472G Figure B-3, the chest depth and buttock depth of a 95th percentile male are about 11 inches; based on these measurements, a reasonable opening size would be 13 inches.

Furthermore, the minimum opening size should be the design goal for the frangible features that provide for egress in the unlikely event a door is jammed in the closed or partially closed position.

If deemed necessary to include a minimum opening size, the guidance for S25.10(b)(5) should be modified to include the appropriate opening size.

response

Partially accepted.

It is acknowledged that the proposed new requirement S25.10(b) was written in a too prescriptive manner; it has been rewritten in a more objective-based manner. The revised requirement no longer presents the issue raised by this comment.

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comment | *155* comment by: *Bombardier*

Reference NPA S25.10(b)(9):
the AFM must include a limitation requiring a pre-flight passenger briefing containing instructions on the operation of the door, including frangibility features.

Comment:
The use of the word "limitation" implies that the information must be included in the Limitations section of the AFM.

It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2).

Also, it should be explicit that instructions on operation of the door must include the requirement that the door be secured open for taxi, takeoff and landing.

The following is the suggested revised text:
operation of the door, including frangibility features and the requirement that the door be secured open for taxi, takeoff and landing, must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

response | *Accepted.*

The text has been amended accordingly.

comment | *182* comment by: *Dassault-Aviation*

Dassault Aviation comment

Comment:
This paragraph represents an alleviation for airplanes certified to CS 25.813(e) at amdt 12 or later. However, it is significantly more stringent than CS 25.813(e) prior to amendment 12. It should be clarified that in case of voluntary compliance to appendix S for an airplane certified to CS 25 prior to Amdt 12, the EASA does not intend to make this § CS S25.10(b) applicable. Otherwise, the target of appendix S would be missed for those airplanes, as no voluntary compliance to appendix S would be applied for.

Requested change and proposed text:
The introduction of CS S25.10(b) should say: ... for airplanes certified to 25.813(e) at amdt 12 or later, ...

response | *Not accepted.*

See the response to comment 127.

comment | *183* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.10(b)(2):
the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains

Comment:
It is expected that the EASA intent is to require access to at least one emergency exit on at least one side of the fuselage. However, it is not said and the current interpretations applicable to emergency exit are to consider symetry (i.e. each requirement has to be shown for each side of the fuselage). Consequentely, clarification would be beneficial.

Requested change and proposed text:
the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains on at least one side of the fuselage.

response *Partially accepted.*
The initial intent of this requirement is indeed the one captured in this comment. The text has been amended accordingly.

comment *184* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.10(b)(3):
... either side …

Comment:
Clarity: "either side" may be understood as applicable to only one side.

Requested change and proposed text:
… both sides …

response *Accepted.*

The text of S20.10 has been amended in line with other comments and thus the proposed change can no longer be directly considered. Care has been taken to avoid room for confusion with the new text.

comment *185* comment by: *Dassault-Aviation*

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Dassault Aviation comment

Extract CS25.10(b)(3):
... either direction …

Comment:
Clarity: "either direction" may be understood as applicable to only one direction

Requested change and proposed text:
… both directions …

response *Accepted.*

See the response to comment 184.

comment *186* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.10(b)(6)(ii)
(ii) it opens automatically, or stays open, and remains secured in the open position when the aeroplane enters any of the following ….

Comment
The requirement that the opening should be automatic is likely to result in pilot unawareness of cabin configuration. Although it may not be a concern, an alternative solution where the pilot decides of the door closing with a cockpit switch presents other benefits, and should be allowed.

Requested change and proposed text
(ii) it opens, or stays open, and remains secured in the open position when the aeroplane enters any of the following flight phases: taxiing, take-off, approach and landing; the opening, and retention in the open and secured position, may be automatic or cockpit switch activated; it must function following complete loss of normal electrical power;

response *Partially accepted.*

See the response to comment 21.

comment *187* comment by: *Dassault-Aviation*

Dassault Aviation comment

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Extract CS25.10(b)(6)(iv):
closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for maintenance purposes.

Comment:
This is unecessarily far too restrictive. For instance, if the airplane is at the parking spot waiting for catering or for baggage loading, with passengers on board, there is no reason to prevent closing the door to ensure passenger privacy, as well as noise and temperature protection. Closing the door in this case has no adverse safety impact.

Requested change and proposed text:
closing of the door is not possible when the airplane is in the taxiing, take-off or landing flight phases.

response

Partially accepted.

See the response to comment 12.

comment *188* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.10(b)(7):
the unavailability of any possible egress path for any crew member or passenger involving movement through the door, i.e. the combined failure of the internal door and the emergency exit for said egress path, must not be more probable than remote

Comment:
This requirement is consistant with CS 25.783(b)(2) which requires that failures that would prevent
opening of any exit after landing must not be more probable than remote. This requirement 25.783(b)(2) is applicable to an exit which incorporates no frangibility feature, which means that the opening of the exit is the ultimate possibility to escape through this exit. Similarly, it is expected that CS S25.10(b)(7) applies considering the ultimate possibilities of using the escape path, and consequently taking credit of the door frangibility.

response

Partially accepted.

See the response to comment 58.

comment *265* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

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CS 25.10(b)
Comment:
This paragraph represents an alleviation for airplanes certified to CS 25.813(e) at amdt 12 or later. However, it is significantly more stringent than CS 25.813(e) prior to amendment 12. It should be clarified that in case of voluntary compliance to appendix S for an airplane certified to CS 25 prior to Amdt 12, the EASA does not intend to make this § CS S25.10(b) applicable. Otherwise, the target of appendix S would be missed for those airplanes, as no voluntary compliance to appendix S would be applied for.

Requested change and proposed text:
The introduction of CS S25.10(b) should say: ... for airplanes certified to 25.813(e) at amdt 12 or later, ...

response *Not accepted.*

See the response to comment 127.

comment *266* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(b)(2)
Extract:
the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains

Comment:
It is expected that the EASA intent is to require access to at least one emergency exit on at least one side of the fuselage. However, it is not said and the current interpretations applicable to emergency exit are to consider symetry (i.e. each requirement has to be shown for each side of the fuselage). Consequentely, clarification would be beneficial.

Requested change and proposed text:
the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains on at least one side of the fuselage.

response *Partially accepted.*

See the response to comment 183

comment *267* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(b)(3)
Extract:
... either side …

Comment:
Clarity: "either side" may be understood as applicable to only one side.

Requested change and proposed text:
… both sides …

response *Accepted.*

See the response to comment 184

comment *268* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(b)(5)
Extract:
... either direction …

Comment:
Clarity: "either direction" may be understood as applicable to only one direction

Requested change and proposed text:
… both directions …

response *Accepted.*

See the response to comment 184

comment *269* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(b)(6)(ii)
Extract
(ii) it opens automatically, or stays open, and remains secured in the open position when the aeroplane enters any of the following ….

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Comment
The requirement that the opening should be automatic is likely to result in pilot unawareness of cabin configuration. Although it may not be a concern, an alternative solution where the pilot determines door closing with a cockpit switch presents other benefits and should be allowed.

Requested change and proposed text
(ii) it opens, or stays open, and remains secured in the open position when the aeroplane enters any of the following flight phases: taxiing, take-off and landing; the opening, and retention in the open and secured position, may be automatic or cockpit switch activated; it must function following complete loss of normal electrical power;

response *Partially accepted.*

See the response to comment 21.

comment *270* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.10(b)(6)(iv)
Extract:
closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for maintenance purposes.

Comment:
This is unecessarily far too restrictive. For instance, if the airplane is at the parking spot waiting for catering or for the crew, with passengers on board, there is no reason to prevent closing the door to ensure passenger privacy, as well as noise and temperature protection. Closing the door in this case has no adverse safety impact.

Requested change and proposed text:
closing of the door is not possible when the airplane is in the taxiing, take-off or landing flight phases.

response *Partially accepted.*

See the response to comment 12.

comment *271* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

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CS 25.10(b)(7)
Extract:
the unavailability of any possible egress path for any crew member or passenger involving movement through the door, i.e. the combined failure of the internal door and the emergency exit for said egress path, must not be more probable than remote

Comment:
This requirement is consistant with CS 25.783(b)(2) which requires that failures that would prevent opening of any exit after landing must not be more probable than remote. This requirement 25.783(b)(2) is applicable to an exit which incorporates no frangibility feature, which means that opening of exit is the ultimate possibility to escape through this exit. Similarly, it is expected that CS S25.10(b)(7) applies considering the ultimate possibilities of using the escape path, and consequently taking credit for door frangibility.

response *Partially accepted.*

See the response to comment 58.

comment *313* comment by: *GAMA*

Page 27, S25.10(a)(6)
The use of the word "limitation" implies that the information must be included in the Limitations section of the AFM.
It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2).

Also, it should be explicit that instructions on operation of the door must include the requirement that the door be secured open for taxi, takeoff and landing.

The following is the suggested text:
"(6) operation of the door, including frangibility features and the requirement that the door be secured open for taxi, takeoff and landing, must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM."

Page 27, S25.10(b)
This paragraph represents alleviation for airplanes certified to CS 25.813(e) at Amdt 12 or later. However, it is significantly more stringent than CS 25.813(e) prior to amendment 12. It should be clarified that in case of voluntary compliance to appendix S for an airplane certified to CS 25 prior to Amdt 12, the EASA does not intend to make this § CS S25.10(b) applicable. Otherwise, the target of appendix S would be missed for those airplanes, as no voluntary compliance to appendix S would be applied for.

Requested change and proposed text:
The introduction of CS S25.10(b) should say: "... for airplanes certified to 25.813(e) at Amdt. 12 or later, ..."

GAMA believes that for each type of airplane there will be a practical limit to the number of

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interior doors based on configuration, design features, aircraft size, and operational requirements. Therefore, GAMA suggests that the NPA remove the limitation of one door in S25.10 and instead, relocate it to AMC in order to allow for the consideration of additional acceptable compensating factors in order to determine the appropriate number of interior doors based on design features.

It is GAMA's belief that there is sufficient experience with the design and certification of interior door systems to better define a set of requirements that results in negligible reduction in safety margins. Further, there are additional compensating factors that can be proposed that could improve these margins and may provide increases in overall safety.

Page 27, S25.10(b)(3)
The use of the words "either side" implies that the door must be placarded on one side but not the other (i.e. either X or Y).

The following is the suggested text:
"(3) the door must be placarded on both sides to be in the safe (i.e. open and secured) position during taxiing, take-off and landing;"

Page 27, S25.10(b)(5)
The use of the words "either direction" implies that the door must be frangible in one direction but not the other (ie either X or Y). It is presumed that the door should be frangible in both directions to account for the fact there may be emergency exits on both sides of the door or in case a compartment must be broken in to.

The following is the suggested text:
"(5) the door must be frangible (or equivalent, e.g. it has a removable panel) in both directions;"

Page 27, S25.10(b)(6)(i)
The word "easily" is not necessary since it is considered to be inconceivable that any interior door design would include a means for operating the door that is complex.

The use of the words "either side" implies that the door must be operable or capability of being unlatched from one side but not the other (i.e. either X or Y).

The requirement should be harmonized with S25.10(a)(4) except that the door cannot incorporate a means to latch the door closed.

The following is the suggested text:
"(i) the door must be operable from both sides;"

Page 27, S25.10(b)(6)(ii)
In lieu of having prescriptive language that requires doors open automatically, GAMA proposes the ability to provide alternative means such as a switch in the cockpit that provides the crew with means to open the doors for takeoff or landing if they have not already been opened.

The following is the suggested text:
(ii) there must be a means to allow the pilots to open the door without leaving their

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seats, or stays open, and remains secured in the open position when the aeroplane enters any of the following flight phases: taxiing, take-off, approach and landing; the opening, and retention in the open and secured position, may be automatic or cockpit switch activated; it must function following complete loss of normal electrical power;

Page 27, S25.10(b)(6)(iv)
"closing of the door is only possible in flight, when the aeroplane is outside of the taxiing, take-off, approach and landing flight phases, or on ground for maintenance purposes."

Comment:
This is unnecessarily far too restrictive. For instance, if the airplane is at the parking spot waiting for catering or for the crew, with passengers on board, there is no reason to prevent closing the door to ensure passenger privacy, as well as noise and temperature protection. Closing the door in this case has no adverse safety impact.

Requested change and proposed text:
closing of the door is not possible when the airplane is in the taxiing, take-off or landing flight phases.

Page 27, S25.10(b)(6)(v)
The expression "closing/latching mechanism" is not clear.
The word latch in S25.10(a)(4) refers to a means to latch the door in the closed position so as to prevent the door from being opened from the other side, as would typically be found on a lavatory door.
However, it is understood that a means to latch a door between passenger seats and an emergency exit to prevent it from being opened from the other side is not acceptable per S25.10(b).
While the expression closing mechanism may have meaning in the case where a door is motorized, that does not appear to be the meaning in this case.
It is believed that the expression "closing/latching mechanism" refers to the mechanism that holds the door in the closed position after it has been closed manually or by a motorized mechanism; if this is the case then the expression "mechanism that holds the door in the closed position" is suggested.

Page 27, S25.10(b)(6)(vi)
GAMA requests that EASA provide additional clarifying information on "remaining functional elements".

response *See the responses to comments 142, 127, 143, 145, 146, 147, 21, 12, 151, 58.*

comment *314* comment by: *GAMA*

Page 28, S25.10(b)(7)
"the unavailability of any possible egress path for any crew member or passenger involving movement through the door, i.e. the combined failure of the internal door and the emergency exit for said egress path, must not be more probable than remote"

This requirement is consistent with CS 25.783(b)(2) which requires that failures that would prevent
opening of any exit after landing must not be more probable than remote. This requirement

	25.783(b)(2) is applicable to an exit which incorporates no frangibility feature, which means that the opening of the exit is the ultimate possibility to escape through this exit. Similarly, it is expected that CS S25.10(b)(7) applies considering the ultimate possibilities of using the escape path, and consequently taking credit of the door frangibility. **Page 28, S25.10(b)(9)** The use of the word "limitation" implies that the information must be included in the Limitations section of the AFM. It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2). Also, it should be explicit that instructions on operation of the door must include the requirement that the door be secured open for taxi, takeoff and landing. The following is the suggested text: "(6) operation of the door, including frangibility features and the requirement that the door be secured open for taxi, takeoff and landing, must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM."
response	*Accepted.* *See the responses to comments 58 and 155.*

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.10 General Cabin Arrangement (c) p. 28

comment	*35* comment by: *FAA* Page 28, S25.10(c) The exception requires that a fire in the compartment would be quickly detected, *because* the compartment would likely be occupied for a majority of the flight time. This both states the justification (fire would be quickly detected) and explains it (compartment is likely to be occupied). However, by further expanding the exclusion to a majority of the flight time, the compartment could likely be unoccupied for a slight minority of the flight time. As this provision is not limited to private use, this seems to be too relaxed. Either limit to non-commercial operations, or do not provide the exception.
response	*Not accepted.* *The commentator's point is noted, namely that the approach leaves a small residual risk of a fire occurring in an isolated compartment without any means for its timely detection. This point was discussed extensively during the development of the rule and AMC text and it was concluded that it would be unreasonable to restrict isolated compartments, without a smoke/fire detection system, to only situations where occupancy by crew or passengers could be truly guaranteed for the entire flight. Aeroplanes covered by the subject rulemaking are commonly operated with passenger numbers below their maximum capacity. This can therefore lead to situations where passengers may occupy a compartment for a period but then chose to move to another compartment, leaving the first compartment empty.* *The AMC text associated to S25.10(c) sets clear and restricted criteria for when it may be argued that a compartment is likely to be occupied for the majority of the flight time. These*

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criteria were chosen and agreed by EASA as being such that the remaining risk is acceptably low, including for the case of commercial operations.
It is to be noted that similar risk assessment and limited acceptance of isolated compartments without smoke/fire detections systems has been performed on a case by case basis for many years when approving aeroplane interiors, including those intended for commercial operations. This rulemaking is now formalising the approach to be taken.

comment

56 comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

S25.10(c) page 28 and associated AMC page 52.
The NPA text proposes "*Isolated Compartments*: each cabin compartment isolated from the rest of the cabin in a way that a fire starting in the compartment would not be directly and quickly detected by the occupants of another compartment, in an aeroplane that has a maximum operational passenger seating configuration of 20 or more, or which has a cabin length of more than 18.29 m (60 ft), must be equipped with a smoke/fire detection system…"
The associated AMC states: "Compartments in an aeroplane with an approved passenger capacity of less than 20 and a cabin length of 18.29 m (60 ft) or less need not in any case be considered as isolated."

The proposed text does not requires the installation of a smoke/fire detection system for aircraft with less than 19 PAX or a cabin length below 18.29m.
In reality, the detectability of a starting fire is not guaranteed solely by a low the number of passengers nor by a short cabin: it is dependent on the cabin door configuration and air-conditioning system.
Therefore, the text should be amended as follows: "*Isolated Compartments*: each cabin compartment isolated from the rest of the cabin in a way that a fire starting in the compartment would not be directly and quickly detected by the occupants of another compartment must be equipped with a smoke/fire detection system…"

response

Not accepted.

The applicability of this requirement was made to be consistent with the rationale followed for lavatory smoke detection (CS 25.854), as explained in the NPA.
This is based on the limited distance between passengers and a possible fire source, further reinforced by a cabin length limitation.
EASA has further considered the NPA proposal in the light of FOCA's comment, and has concluded that no change is necessary.

comment

156 comment by: *Bombardier*

Reference NPA S25.10(c):
Isolated Compartments: each cabin compartment isolated from the rest of the cabin in a way that a fire starting in the compartment would not be directly and quickly detected by the occupants of another compartment.

Comment:
The word "and" has been replaced by the word "or" in the corresponding text of AMC to Appendix S, S25.10(c); the disagreement needs to be corrected.

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Also, the word "directly" is not clearly explained and since isolated compartments are not occupied the majority of the flight time, it must be assumed that the word "directly" does not refer to visual detection by an occupant of the isolated compartment; it is possible that the word "directly" means that there is a smoke/fire detection system installed but this is not clear.

response

Partially accepted

EASA agrees that there is a potential for misunderstanding with regard to the switch between 'and' and 'or' in the requirement and AMC. Consequently, '…would not be directly or quickly…' in AMC S25.10(c) has been revised to '…would not be directly or would not be quickly…'

Not accepted.

The word 'directly' for the detection of a fire unambiguously refers to a detection which is not based on a (smoke detection) installed system since whenever, in the context of the requirement, a 'direct' detection of the fire is possible, then there is no need for such a system to be installed. It is believed that 'directly' will be correctly interpreted here as referring to the use of an aeroplane occupant's sense (smell and sight). Therefore, EASA believes that no additional clarification in the AMC is deemed necessary.

comment *315* comment by: *GAMA*

Page 28, S25.10(c)
The word "and" has been replaced by the word "or" in the corresponding text of AMC to Appendix S, S25.10(c); the disagreement needs to be corrected.

Also, the word "directly" is not clearly explained and since isolated compartments are not occupied the majority of the flight time, it must be assumed that the word "directly" does not refer to visual detection by an occupant of the isolated compartment; it is possible that the word "directly" means that there is a smoke/fire detection system installed but this is not clear.

response

Not accepted.

See the response to comment 156.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.10 General Cabin Arrangement (d) p. 28

comment *109* comment by: *Airbus Operations GmbH*

Airbus Comment No. 5bis on:
- S25.10(d) on Deactivation of existing Emergency Exits

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 28/81, paragraph (d)

2. PROPOSED TEXT / COMMENT:

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Airbus proposes Changing paragraph (d) as follows: (new text underlined , deleted text ~~strikethrough~~)

(d) *Deactivation of existing Emergency Exits*: Deactivation of one of more emergency exits, that results in non-compliance with CS 25.807(e)~~(1)~~, is acceptable provided compliance with the following requirements is shown (See AMC to Appendix S, S25.10(d) and (e)):

(1) the number of passenger seats allowed in a zone between two remaining adjacent pairs of emergency exits is limited to one half of the combined rated capacity of the two pairs of emergency exits (rounded to the nearest whole number);

(2) the number of passenger seats allowed in a zone with only one pair of emergency exits at one end (a so called dead end zone) is limited to one half of the rated capacity of the pair of emergency exits (rounded to the nearest whole number); and

(3) the ~~requirements of CS 25.807(e)(2) are still complied with, considering only the remaining~~ distance from any passenger seat to non-deactivated emergency exits remains acceptable (See AMC 25.807 § 2).

3. RATIONALE / REASON / JUSTIFICATION for the Comment:

For consistency with our proposal on CS 25.807(e) and AMC 25.807

response

Partially accepted.

Although the exact wording proposed in the comment has not been fully retained, the relevance of the comment is acknowledged and it has been taken into account in the final proposed text.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.10 General Cabin Arrangement (e) p. 28

comment *8* comment by: *Airbus Operations GmbH*

Airbus Comment No. 2 on:
- S25.10(d)(3) on deactivated exits
- S25.10(e)(1) on distance between exits
- AMC S25.10(d) and (e)

Note: This comment is related to 3 sections and will be placed into the CRT database at all positions**.**

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 28/81, S25.10(d)(3) and S25.10(e)(1)
Page 59-60/81, AMC S25.10(d) and (e)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

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S25.10 on General Cabin Arrangement
(d) Deactivation of existing Emergency Exits: Deactivation of one of more emergency exits, that results in non-compliance with CS 25.807(e)(1), is acceptable provided compliance with the following requirements is shown (See AMC to Appendix S, S25.10(d) and (e)):
(…)
(3) the requirements of CS 25.807(e)(2) are still complied with, considering only the remaining non-deactivated emergency exits.

(e) Distance between Emergency Exits: deactivation of emergency exits which results in non-compliance with CS 25.807(f)(4) is acceptable on non-commercially operated aeroplanes only, provided that:
(1) compliance with S25.10(d) is shown; and (…)

Airbus Comment:

As written, this text proposal differs from the initial SLRG proposal agreeing to set-up such design criteria to address both commercially and non-commercially operated aeroplanes when deactivating existing emergency exits.

The current EASA proposal has "only" retained the new constraining maximum seat to exit distance for any aeroplanes (new CS 25.807(e)(2)), but has limited the deactivation to the non-commercially operated aeroplanes only.

As a result, the maximum seat-to-exit distance is now limited to the maximum 30ft/45ft criteria on non-commercially operated aeroplanes with deactivated exits, whereas some cabin layouts have been recently approved on non-commercially operated aeroplanes with deactivated exits with seat-to-exit distances exceeding the new 30ft/45ft criteria.

Either the 30ft/45ft criteria is considered "universally" adequate for seat-to-exit maximum distance, and therefore this should be predominant to the kind of operations (commercial or non-commercial), or the Agency should further develop where the 30ft/45ft criteria is coming from and why recently approved projects with larger distances would now be considered unsafe.

In other words, the 30ft/45ft criteria was only agreed by the SLRG as a consensual design criteria to enable deactivating exits on both commercially and non-commercially operated aeroplanes.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:

The 30ft/45ft criteria was proposed to find a consensual design criteria to enable deactivating exits on both commercially and non-commercially operated aeroplanes.

The EASA has retained the industry proposal for more stringent standard (proposed to gain the possibility to deactivate exits on commercially operated aeroplanes of more than 19PAX), but has then refused to authorize the deactivation of exits on the commercially operated aeroplanes (See dissenting position on deactivation of exits).

See also our comment on CS 25.807 and AMC 25.807.

response *Not accepted.*

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The applicability of the requirement on the deactivation of emergency exists creating a distance of more than 60 ft between exits was identified in the NPA as a dissenting view between the stakeholders and EASA; the rationale for the EASA decision has been captured in the NPA, in paragraph 6.3.
Regarding the seat-to-exit distance criteria, it is now part of the AMC (in the final text: see the responses to comments 7 and 109) for both CS 25.807(e) and S25.10(d). The primary favoured means to comply with the requirement for a uniform distribution of emergency exits are to be found in the FAA AC 25.807-1; however, the new seat-to-exit distance criteria is offered as an alternate means of compliance in the case of deactivation of emergency exits that result in not fulfilling the criteria of the FAA AC 25.807-1. These criteria were considered by the rulemaking group as being a logical corollary of the 60 ft rule (CS 25.807(f)(4)) and therefore as pursuing the same goal.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.20 Emergency Evacuation p. 28-29

comment *36* comment by: *FAA*

Page 28-29, S25.20(a)

This is inconsistent with the pending FAA flammability NPRM, which would apply to all berths etc. and will lead to lack of harmonization between the FAA and EASA.

Delete this provision.

response *Not accepted.*

This requirement addresses purely a VIP cabin configuration related issue. Such mattresses are in compartments that would be isolated as per S25.10(c), and the risk of fire is addressed. For post-crash situations, there is no safety gain when mattresses in enclosed compartments comply with App F part II.
In addition, this provision is more stringent than the current FAA AC 25.853-1. The referenced NPRM has not been published yet, and its outcome after the consultation period is unknown. When the new AC is published, EASA will address any harmonisation issues.

comment *157* comment by: *Bombardier*

Reference NPA S25.20(a)(1):
Mattresses of permanent bed installations that are located in compartments isolated from the main passenger cabin by doors or equivalent means that would normally be closed during taxiing, take-off and landing need not meet the 'Oil Burner Test' requirement of Appendix F, Part II as required by CS 25.853(c) (See AMC to Appendix S, S25.20(a)(1)).

Comment:
CS 25.853(c) does not require that mattresses meet the "Oil Burner Test" requirement of Appendix F, Part II and are specifically excluded in accordance with FAA AC 25.853-1 paragraph 6.e which states in part:

"*Berths are also excepted from these requirements if they are used exclusively as*

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berths. Berths that are convertible to seats must be tested."
This requirement should be eliminated altogether since it implies that CS 25.853(c) applies to mattresses of permanent bed installations if the mattress is located in a compartment not isolated from the main passenger cabin by doors or equivalent means that would normally be closed during taxiing, take-off and landing. This is not the case since CS 25.853(c) only applies to seat cushions.

response *Not accepted.*

The understanding of the commentator on the implication of the new requirement S25.20(a)(1) is correct; it is on purpose that EASA has anticipated the future revision of FAA AC 25.853-1, which is expected to require all berths to meet the 'oil burner test' requirement of Appendix F, Part II. Please see also comment 36 from the FAA, and the associated response.

comment *189* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.20(b)(2):
(2) the passenger capacity of the aeroplane is reduced below that allowed by CS 25.807(g) and …

comment:
The rule should not assume that the number of passengers will have to be reduced. There are obstructions, such as certain tables, which ease the passenger flow through a type III emergency exit, thus resulting in no passenger capacity reduction.

Requested change and proposed text
(2) the maximum passenger capacity is such that the passengers can be evacuated, with the obstruction in its most adverse position and under the conditions of Appendix J, at least as quickly as the maximum number of passengers allowed by CS 25.807(g) could without the obstruction.

response *Accepted.*

The proposed text change has been made.

comment *316* comment by: *GAMA*

Page 28, S25.20(a)(1)
CS 25.853(c) does not require that mattresses meet the "Oil Burner Test" requirement of Appendix F, Part II and are specifically excluded in accordance with FAA AC 25.853-1 paragraph 6.e which states in part:
"Berths are also excepted from these requirements if they are used exclusively as berths. Berths that are convertible to seats must be tested."

response *Not accepted.*

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See the response to comment 157.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.20 Emergency Evacuation (b) p. 29

comment *23* comment by: *LHT DO*

S25.20(b)(1): Reduction of passenger capacity should only be required if the demonstrated evacuation performance with the obstruction in its most adverse condition has an adverse effect, compared to the un-obstructed situation.

response *Accepted.*

See the response to comment 189.

Note: this comment is related to S25.20(b)(2) and not (b)(1).

comment *37* comment by: *FAA*

Page 29, S25.20(b)

We disagree with this provision being applied to commercial operation for 19 passenger arrangements. Paragraph (b)(2) does not explicitly require that the exit in question be used in the required demonstration. Although the resulting configuration must perform equal to a type IV exit, the performance of a type IV exit is not well established. Since the type IV exit is only allowed on airplanes with 9 or less passengers, it is not generally tested and in this case would be replacing a type III exit.

Limit this to non-commercial use.

response *Accepted.*

It has now been clarified that the exit in question must be used when showing compliance to S25.20(b).

Not accepted.

With regard to paragraph (b)(2), the intent is that the remaining exit is geometrically equivalent to a type IV exit. This is explained in AMC S25.20(b). It is not intended that the equivalency is shown by means of test data.

Not accepted.

EASA believes that the compensating factors set out in S25.20(b) enable to achieve an equivalent level of safety compared to the situation where no obstruction of the emergency exit would be allowed during cruise, for these particular aeroplanes operated in low density (for which the evacuation capacity is, in real operating conditions, always higher than required by the certification requirements), irrespective of the type of operation.

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comment	*38* comment by: *FAA* Page 29, Appendix S S25.20(b) What about cushions or other items that are automatically removed in the process of opening the exit? Also, what about water dams that are installed prior to a planned ditching? Add a discussion to address items that are automatically removed in the process of opening the exits. Address the installation of water dams.
response	*Not accepted.* *The minor obstructions created by cushions or other items that are automatically removed in the process of opening the exit are addressed in paragraph 9 of the amended AMC 25.813(c), since it was considered not to be specifically applicable to low occupancy aeroplanes or non-commercially operated aeroplanes.* *EASA is not aware of existing designs utilising water dams at Type III or IV emergency exits, and sees no reason to predict their existence in the future.*

comment	*59* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland* S25.20(b)(3) page 29 The NPA text proposes "for aeroplanes required to have at least one cabin crew member on board, the item is intended for use by a cabin crew member that has direct view to the deployable item and can confirm that it is correctly stowed and secured while they are seated during taxiing, take-off and landing." Unlike S25.20(b)(1) and (2) there is no requirement to demonstrate that with the obstruction in place, the remaining exit is at least as effective as a Type IV exit. Actually, this implies that it is not even required to be able to open the emergency exit with the obstructions in place. FOCA considers that it would not be adequate to have the emergency exit openable only with the obstructions removed and hence rely solely on the cabin crew. Therefore the following text is proposed: (3) for aeroplanes required to have at least one cabin crew member on board, the item is intended for use by a cabin crew member that has direct view to the deployable item and can confirm that it is correctly stowed and secured while they are seated during taxiing, take-off and landing and it must be demonstrated that the exit can be opened as required by CS 25.809 with the obstruction in its most adverse position(s).
response	*Not accepted.* *Designs involving items deployed across emergency exits by cabin crew have been approved on several occasions in the past, e.g. in-flight only tables for food/beverage presentation, on the basis that the item's deployment remains obvious to the crew during taxi, take-off and landing. S25.20(b)(3) is only formalising this existing allowance.*

comment	*273* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.20(b)(2)
Extract:
(2) the passenger capacity of the aeroplane is reduced below that allowed by CS 25.807(g) and …

comment:
The rule should not assume that the number of passengers will have to be reduced. There are obstructions, such as certain tables, which ease the passenger flow through a type III emergency exit, thus resulting in no passenger capacity reduction.

Requested change and proposed text
(2) the maximum passenger capacity is such that the passengers can be evacuated, with the obstruction in its most adverse position and under the conditions of Appendix J, at least as quickly as the maximum number of passengers allowed by CS 25.807(g) could without the obstruction.

response *Accepted.*

See the response to comment 189.

comment *317* comment by: *GAMA*

Page 29, S25.20(b)(2)
"(2) the passenger capacity of the aeroplane is reduced below that allowed by CS 25.807(g) and …"

The rule should not assume that the number of passengers will have to be reduced. There are obstructions, such as certain tables, which ease the passenger flow through a type III emergency exit, thus resulting in no passenger capacity reduction.

"(2) the maximum passenger capacity is such that the passengers can be evacuated, with the obstruction in its most adverse position and under the conditions of Appendix J, at least as quickly as the maximum number of passengers allowed by CS 25.807(g) could without the obstruction."

response *Accepted.*

See the response to comment 189.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.30 Circulation Inside Cabin During Flight p. 29-30

comment *17* comment by: *Airbus Operations GmbH*

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Airbus Comment No. 6 on:
- S25.30(a) Width of Aisle

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 29/81, Appendix S25.30(a)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(a) Width of Aisle: for low-occupancy aeroplanes that have a maximum operational passenger seating configuration of 19 or less, and non-commercially operated aeroplanes, the design must be such that (…)

Airbus Comment:

The comment is to bring a new argument regarding the uneven level playing field that represents maintaining a limitation to the "19 or less passenger aeroplanes".

Airbus respectfully requests the EASA to reconsider its position with regards to the possibility to move deployable items / rotate seats… on low occupancy aeroplanes commercially operated above 19 passengers, on the basis of setting in CS-25 the conditions for level playing between manufacturers.

Basis:
In the appendix 6, §6.3.1 page 77/78, the Agency decided to support a conservative approach that partly relies on the "*Proposed Deviation on JAR/CS 25.815' already published on the EASA website for public consultation (expiration date: 13 April 2014)*", as indicated in the explanatory note section 2.4.2 p16.

The EASA in particular states that the small 19-passengers aeroplanes should be granted some relief regarding the width of aisle requirement in flight "*on the basis of need, i.e. the space is limited in such aeroplanes*" (see p78).

Comment:
It is unclear to which extend the EASA is considering that there is a relation between the number of occupants on an aeroplane and the effective width of a cabin that justifies the true "need" for not requiring designs to comply with the width of aisle requirement in flight.
This lack of clarification, together with maintaining a limitation to 19 or less passengers, constitutes an uneven level playing fields for executive interior accommodations with no technical reasons.

Examples of uneven level playing fields
1/ At time of initial publication for public comment, it was not argued that smaller seats could equally fit as well in the cabin for a fully compliant design, and that there was actually no real technical impossibility, and therefore no real "need" for granting such deviation to the applicants (ie. there is actually no "need" to fit large seats in too narrow cabins). The position of the EASA therefore represents a deliberate will to support the installation of large business seats in the narrow cabins of the 19-passenger business jets.

Regarding the larger cabins accommodations for executive interiors, there are other cabin items that may be desired to be installed, and that create the same "need" to keep installing

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large seats in the remaining available cabin space. The position of the EASA to deliberately support the installation of large seats in the narrow cabins of the 19-passenger business jets, and deliberately reject the same installation of large seats in the remaining narrow cabin space therefore represent an unfair treatment and creates an uneven level playing field.

2/ Some manufacturers are currently developing 19-passenger seats aeroplanes with wider cabins. With an increased cabin width, the "space limitation" and the "need" argument may be considered as not applicable anymore, but still such design will benefit from the relief of the width of aisle requirement proposed in the new rule. The lack of clarification of a cabin width limit, together with maintaining a limitation to 19 or less passengers, constitutes an uneven level playing field for executive interior accommodations.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Level playing fields with manufacturers of smaller business jets.

response

Not accepted.

The applicability of the requirement on the width of aisles was identified in the NPA as a dissenting view between the stakeholders and EASA; the rationale for the EASA decision has been captured in the NPA, in paragraph 6.3. Although this comment further elaborates on the stakeholder argumentation, it does not bring any additional elements to the debate that was already arbitrated. In addition, it addresses only one of the rationales listed as retained for the EASA final decision. For this reason, the comment is not accepted.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.30 Circulation Inside Cabin During Flight (b) p. 30

comment

159 comment by: *Bombardier*

Reference NPA S25.30(b):
Firm Handholds: in lieu of the requirements of CS 25.785(j), if the seat backs do not provide a firm handhold, there must be an acceptable means to enable persons to steady themselves while using the aisles in moderately rough air (See AMC to Appendix S, S25.30(b)).

Comments:
CS 25.785(j) also provides for the use of handgrips or rails along each side of the aisle; as written, it is suggested that any means used by persons other than seat backs would make this requirement and the associated guidance applicable.

The following is the suggested revised text (note that the word "aisles" has been changed to the singular "aisle" since the requirement will apply to each aisle and the expression "each side of the aisles" could be misconstrued):
Firm Handholds: in lieu of the requirements of CS 25.785(j), if firm handholds are not provided along each side of the aisle, there must be an acceptable means to enable persons to steady themselves while using the aisle in moderately rough air (See AMC to Appendix S, S25.30(b)).

response

Not accepted.

The requirement S25.30(b) provides an alternative to CS 25.785(j) ('in lieu of the requirements of CS 25.785(j) (…)'), which means that in any case, compliance with CS 25.785(j) is

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acceptable, possibly through the use of handgrips or rails along each side of the aisle. Therefore, it is believed that the S25.30(b) does not need to be revised.

comment *318* comment by: *GAMA*

Page 30, S25.30(b)
CS 25.785(j) also provides for the use of handgrips or rails along each side of the aisle; as written, it is suggested that any means used by persons other than seat backs would make this requirement and the associated guidance applicable.
The following is the suggested text (note that the word "aisles" has been changed to the singular "aisle" since the requirement will apply to each aisle and the expression "each side of the aisles" could be misconstrued):
(b) Firm Handholds: in lieu of the requirements of CS 25.785(j), if firm handholds are not provided along each side of the aisle, there must be an acceptable means to enable persons to steady themselves while using the aisle in moderately rough air (See AMC to Appendix S, S25.30(b)).

response *Not accepted.*

See the response to comment 159.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.40 Markings and Placards p. 30

comment *160* comment by: *Bombardier*

Reference NPA S25.40(a):
a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited:
(1) in lieu of the requirements of CS 25.791(a) and CS 25.791(d), a single 'No smoking' placard must be provided, conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane — compliance with CS 25.853(g) is not required;
(2) The indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

Comments:
This requirement is worded such that regardless of whether or not the requirements of CS 25.791(a) and CS 25.791(d) are met, all non-smoking airplanes will require the briefing referred to in (a)(2).

The following is the suggested revised text:
(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited, in lieu of the requirements of CS 25.791(a) and CS 25.791(d):
(1) a single 'No smoking' placard must be provided, conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane; and
(2) the indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

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Compliance with CS 25.853(g) is not required.

response *Partially accepted.*

A revised text, in the spirit of that proposed in comment 190 has been adopted.

comment *190* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.40(a)

(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited: (1) in lieu of the requirements of CS 25.791(a) and CS 25.791(d), a single 'No smoking' placard must be provided, conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane — compliance with CS 25.853(g) is not required;

(2) The indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

Comment
This paragraph is worded as an obligation to install a single non-smoking placard in lieu of the requirements of CS 25.791(a) and CS 25.791(d), where it should be an alternative to CS 25.791(a) and CS 25.791(d).

Requested change and proposed text/

(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited,in lieu of the requirements of CS 25.791(a) and CS 25.791(d), a single 'No smoking' placard may be provided. In such case:

(1) the single 'No smoking' placard must be conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane — compliance with CS 25.853(g) is not required;

(2) The indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

response *Accepted.*

The text has been revised, retaining the intent of the comment.

comment *274* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

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CS 25.40(a)
Extract
(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited:
(1) in lieu of the requirements of CS 25.791(a) and CS 25.791(d), a single 'No smoking' placard must be provided, conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane — compliance with CS 25.853(g) is not required;
(2) The indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

Comment
This paragraph is worded as an obligation to install a single non-smoking placard in lieu of the requirements of CS 25.791(a) and CS 25.791(d), where it should be an alternative to CS 25.791(a) and CS 25.791(d).

Requested change and proposed text/
(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited,in lieu of the requirements of CS 25.791(a) and CS 25.791(d), a single 'No smoking' placard may be provided. In such case:
(1) the single 'No smoking' placard must be conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane — compliance with CS 25.853(g) is not required;
(2) The indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

response *Accepted.*

See the response to comment 190.

comment *319* comment by: *GAMA*

Page 30, S25.40(a)
This requirement is worded such that regardless of whether or not the requirements of CS 25.791(a) and CS 25.791(d) are met, all non-smoking airplanes will require the briefing referred to in (a)(2).

The following is the suggested text:
(a) 'No Smoking' Placards and Lavatory Ashtrays: if smoking is to be prohibited, in lieu of the requirements of CS 25.791(a) and CS 25.791(d):
(1) a single 'No smoking' placard must be provided, conspicuously located inside the passenger compartment, and installed in the immediate vicinity of each door that can be used as a passenger boarding door; the placard must be clearly legible for passengers entering the aeroplane; and
(2) the indication that smoking is prohibited must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM.

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	Compliance with CS 25.853(g) is not required.
response	*Partially accepted.* *A revised text, in the spirit of that proposed in comment 190 has been adopted.*

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.40 Markings and Placards (c) p. 30

comment	*158* comment by: *Bombardier* **Reference NPA S25.40(c)(2):** For each seating location available for in-flight use only (including in-flight-only seats, beds, berths and divans), it must be clearly marked that it is not to be occupied during taxiing, take-off and landing. **Comment:** The requirement may be understood to require that the in-flight seat itself be marked that it is not to be occupied during taxiing, takeoff and landing. Instead, there should be a placard (or equivalent marking) legible to the seated occupant that the seat is approved for in-flight use only and not to be occupied for taxi, takeoff or landing. The following is the suggested revised text: *For each seating location available for in-flight use only (including in-flight-only seats, beds, berths and divans), a placard indicating that it is not to be occupied during taxiing, take-off and landing must be installed such that it is legible to the seated occupant.*
response	*Accepted.* *The requested change has been made.*

comment	*320* comment by: *GAMA* **Page 30, S25.40(c)(2)** The requirement may be understood to require that the in-flight seat itself be marked that it is not to be occupied during taxiing, takeoff and landing. Instead, there should be a placard (or equivalent marking) legible to the seated occupant that the seat is approved for in-flight use only and not to be occupied for taxi, takeoff or landing. The following is the suggested text: "(2) For each seating location available for in-flight use only (including in-flight-only seats, beds, berths and divans), a placard indicating that it is not to be occupied during taxiing, take-off and landing must be installed such that it is legible to the seated occupant."
response	*Accepted.* *See the response to comment 158.*

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3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.50 Miscellaneous p. 30-31

comment *60* comment by: *Andrew Hanley (Jet Aviation)*

JBSC propose to add a new paragraph S25.50(c) in order to clarify that the security considerations of CS 25.795 are not applicable to non-commercial aeroplanes. The miscellaneous section provides a good opportunity to include such clarification and does not introduce any controversial or new requirement.
This proposal is harmonised with SFAR 109 article number 16.

Suggest text:
CS 25.50(c) Security Considerations: The requirements of CS 25.795 are not applicable to non-commercial aeroplanes certified in accordance with this appendix.

response *Not accepted.*

See the response to comment 127.

comment *87* comment by: *LHT DO*

LHT suggests adding subparagraph (c) consistent with SFAR 109.16: the provisions of CS 25.795 do not apply to private transport airplanes.

response *Not accepted.*

See the response to comment 127.

comment *110* comment by: *Airbus Operations GmbH*

Airbus Comment No. 7 on:
- S25.50 Miscellaneous

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 30/81, Appendix S25.50

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

There is nothing about relieving non-commercially operated aeroplanes from compliance with 25.795 regarding the reinforced cockpit doors.

Airbus Comment:

For consistency with SFAR 109, regulatory provisions should be added in this section for indicating that non-commercially operated aeroplanes are not required to comply with

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25.795.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Missing opportunity.

response *Not accepted.*

See the response to comment 127.

comment *162* comment by: *Bombardier*

Reference NPA S25.50 (Miscellaneous)

Comment:
It is suggested that Appendix S include relief from the security considerations of CS 25.795 to be consistent with the provisions of SFAR 109.16.

response *Not accepted.*

See the response to comment 127.

comment *191* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
Miscellaneous

Comment:
Considering the types of passengers that are using private airplanes, and consistently with SFAR 109 § 16, airplanes used in non commercial operations should be exempted from the security requirements of CS 25.795.

Requested change and proposed text:
Ad a new sub-§ (c) to exempt appendix S private transport airplanes from the requirement of CS 25.795.

response *Not accepted.*

See the response to comment 127.

comment *275* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

CS 25.50
Extract:

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Miscellaneous

Comment:
Considering the types of passengers that are using private airplanes, and consistently with SFAR 109 § 16, airplanes used in non commercial operations should be exempted from the security requirements of CS 25.795.

Requested change and proposed text:
Ad a new sub-§ (c) to exempt appendix S private transport airplanes from the requirement of CS 25.795.

response *Not accepted.*

See the response to comment 127.

comment *322* comment by: *GAMA*

Page 31, S25.50
Considering the types of passengers that are using private airplanes, and consistently with SFAR 109 § 16, airplanes used in non-commercial operations should be exempted from the security requirements of CS 25.795.

GAMA suggests EASA ad a new sub-§ (c) to exempt appendix S private transport airplanes from the requirement of CS 25.795.

response *Not accepted.*

See the response to comment 127.

3.2.1. Draft amendment to CS-25 — Book 1 — Appendix S — S25.50 Miscellaneous (b) p. 31

comment *161* comment by: *Bombardier*

Reference NPA S25.50(b)
Stowage Compartment Latching Mechanisms: Latching mechanisms must be appropriate for the type of area in which they are installed (See AMC to Appendix S, S25.50(b)).

Comment:
The reason for including this requirement is not clear.

The requirements of CS 25.561 and CS 25.787, as well as the limited guidance regarding wear and deterioration in AMC 25.787(b), would seem to address safety concerns from a regulatory point of view.

It is acknowledged that the proposed AMC to Appendix S, S25.50(b) includes useful guidance

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	but this guidance should apply to stowage compartments on all transport airplanes as opposed to only non-commercial & low occupancy airplanes.
response	*Accepted.* *After review of the AMC, it has been concluded that it can indeed apply to all large transport aeroplanes as opposed to only non-commercially operated aeroplanes and low occupancy aeroplanes. The guidance material has now been included in the AMC 25.787(b).*

comment	*321* comment by: *GAMA* **Page 31, S25.50(b)** The reason for including this requirement is not clear. The requirements of CS 25.561 and CS 25.787, as well as the limited guidance regarding wear and deterioration in AMC 25.787(b), would seem to address safety concerns from a regulatory point of view. It is acknowledged that the proposed AMC to Appendix S, S25.50(b) includes useful guidance but this guidance should apply to stowage compartments on all transport airplanes as opposed to only non-commercial & low occupancy airplanes.
response	*Accepted.* *See the response to comment 161.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.603(a) Large Glass Items p. 32-36

comment	*39* comment by: *FAA* Page 32, Book 2 AMC, Subpart D AMC 25.603 Is there any intended distinction between compartments like lavatories, not occupiable for takeoff and landing, and the main cabin? There is no mention of other than 'large' glass items. Address other than 'large' glass, at least by acknowledging it is not covered.
response	*Not accepted.* *It is implicit from the introduction paragraph 1.(2) of the AMC that items of glass that are neither installed in compartments which can be occupied during take-off and landing, nor on an egress path, may not need to be tested according to the standards of this AMC. The same applies to glass items that do not fall in the 'large glass item' category, according to the criteria set out in the new proposed AMC at paragraph 1.(1).* *It is clear that the AMC is not intended to cover smaller glass items. EASA believes that such items are adequately covered by other CS 25 paragraphs such as 25.603, 25.561, 25.789. However, on a case-by-case basis, a Special Condition might need to be issued for specific designs where it is considered that the failure of a 'small' glass item would adversely affect*

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safety.

comment

40 comment by: *FAA*

Page 33, Book 2 AMC – Subpart D AMC 25.603(a)

We are concerned, when the glass is installed over the seated height of the occupant, about the safety impact of small glass particles falling into the eyes of the occupants.

Make a new section for overhead glass that prohibits any glass particle from coming loose for this type of installation under these proposed test conditions.

response

Noted.

The concern raised in this comment is acknowledged, however, it was never raised in the past projects and, therefore, was not covered by this rulemaking task. Addressing this concern after publication of the NPA would constitute a significant change to the proposed amendment. Before this could be introduced in the AMC, further research would be needed and, therefore, EASA proposes to address it in a future amendment of CS-25, when the technical matter is mature, and, in the meantime, it should be addressed on a case-by-case basis.

comment

61 comment by: *Andrew Hanley (Jet Aviation)*

§ 3.2.4

This text proposal differs from the initial SLRG proposal suggesting to add:
- seating area typical dimensions of 30 cm x 30 cm (12 in x 12 in)
- stepping area typical dimension of 10 cm x 20 cm (4in x 8in).

Without such precisions, the only reference to apply the loads is §3.1 of this AMC, suggesting using “any loading pad with a shape and dimensions that fit into a 15.24-cm (6-in.) diameter circle.” (ie. a relatively small surface of 28,26 in² representative of a hand)).

While this is appropriate for the pushing loads of maximum 130daN (300 lbs), applying higher loads of 222 daN (500 lbs) on a relatively small surface of 28,26 in² (representative of a hand) as compared to 32 in² (representative of a step), or 144in² (representative of a seating surface) is an excessive requirement with no justification.

Request to add the seating / stepping typical dimensions to take into account.

response

Not accepted.

Up to one meter, it is considered that both stepping and seating loads have to be substantiated, since nothing would prevent an occupant to step on an item on which another occupant would seat. The stepping being more conservative, there is no need to refer to

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seating loads.
Whereas the loading pad dimensions quoted in the comment for the stepping loads indeed consider the typical dimensions of a flat foot, it is also true that an occupant could equally load the item with a more reduced area, i.e. when stepping with toes bent; therefore, specifying a maximum 6-inch-diameter loading pad is considered to be a reasonable compromise.

comment *88* comment by: *LHT DO*

3.2.4: It should be differentiated between stepping and seating loads. Stepping loads will typically act on a smaller surface area than seating loads.

response *Not accepted.*

See the response to comment 61.

comment *111* comment by: *Airbus Operations GmbH*

Airbus Comment No. 8 on:
- AMC 25.603(a) on Large Glass Items

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 32/81, paragraph 1.(1).(iii)

2. PROPOSED TEXT / COMMENT:

The proposed text indicates:

(1) A glass panel is considered to be a large glass item if:
(i) the maximum dimension exceeds 51 cm (20 in.);
(ii) the surface area of one side exceeds 0.12 m² (200 in.²); or
(iii) the glass mass exceeds 4 kg.
In case of multiple items in close proximity, the accumulated surface area of glass as well as the total mass should be considered (i.e. effects such as tiling should be considered).

Airbus Comment:

This text proposal may be a "typo" for subparagraph (iii) as compared to the initial SLRG proposal, resulting in a change in the meaning. The SLRG proposal was to consider as "large Glass Items":
- A glass panel whose maximum dimension exceeds 51 cm (20 in), or whose surface area of one side exceeds 0.12 m² (200 square inches), or
- Any glass item whose weight exceeds 4 kg.

The SLRG proposal was to include other items made in glass, such as decorative glass items (typically a lamp base made in glass), whose failure may have the same adverse safety effect than the failure of glass panels made in glass.

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3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Change of meaning as compared to SLRG proposal.

response

Accepted.

The text has been revised in line with the point raised.

comment

112 comment by: *Airbus Operations GmbH*

Airbus Comment No. 9 on:
- AMC 25.603(a) on Large Glass Items

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 35/81, paragraph 3.2.4

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

3.2.4 Stepping, Seating loads
Only for large glass items which may be stepped or sat on, a load of 222 daN (500 lbs) should be used. This load is to be applied at the most critical point, and on any relevant surface up to 1 m (38 in.) above the floor level (see (4) in Figure 1 below).

Airbus Comment:

This text proposal differs from the initial SLRG proposal suggesting to add:
- seating area typical dimensions of 30 cm x 30 cm (12 in x 12 in)
- stepping area typical dimension of 10 cm x 20 cm (4in x 8in).

Without such precisions, the only reference to apply the loads is §3.1 of this AMC, suggesting using “any loading pad with a shape and dimensions that fit into a 15.24-cm (6-in.) diameter circle.” (ie. a relatively small surface of 28,26 in² representative of a hand)).

While this is appropriate for the pushing loads of maximum 130daN (300 lbs), applying higher loads of 222 daN (500 lbs) on a relatively small surface of 28,26 in² (representative of a hand) as compared to 32 in² (representative of a step), or 144in² (representative of a seating surface) is an excessive requirement with no justification.
Airbus requests to add the seating / stepping typical dimensions to take into account.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Change of constraint as compared to SLRG proposal.

response

Not accepted.

See the response to comment 61.

comment

163 comment by: *Bombardier*

Reference NPA AMC 25.603 1.(2)(a):
(i) The glass item should be subjected to, and pass, a ball impact testing (see Paragraph 2

below).
(ii) The glass item should be subjected to, and pass, an abuse load testing (see Paragraph 3 below).

Comment:
Grammatical errors.
The following is the suggested revised text:
(i) The glass item should be subjected to, and pass, ball impact testing (see Paragraph 2 below).
(ii) The glass item should be subjected to, and pass, abuse load testing (see Paragraph 3 below).

response *Accepted*

The text has been revised as proposed.

comment *192* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.603(a)1.(1)
(1) A glass panel is considered to be a large glass item if:
(i) the maximum dimension exceeds 51 cm (20 in.);
(ii) the surface area of one side exceeds 0.12 m² (200 in.²); or
(iii) the glass mass exceeds 4 kg.

Comment:
As written, this AMC defines when a glass panel has to be considered as a large glass item, but fails to define when other glass items (which are not panels) are large glass items. This confusion was introduced when the EIR WG proposed NPA was rewritten. It is proposed to return to the EIR WG NPA definitions: criteria (i) and (ii) apply to glass panels only, and criteria (iii) applies to any glass item (panel or not).

Requested change and proposed text:
(1) A glass item is considered to be a large glass item if:
(i) it is a glass panel with a maximum dimension exceeding 51 cm (20 in.);
(ii) it is a glass panel with a surface area of one side exceeding 0.12 m² (200 in.²); or
(iii) it is a glass item which glass mass exceeds 4 kg.

response *Accepted.*

See the response to comment 111.

comment *193* comment by: *Dassault-Aviation*

Dassault Aviation comment

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Extract CS25.603(a)1.(2):
(2) A large glass item should meet the following requirements whenever installed in compartments that may be occupied during taxiing, take-off and landing, or may be traversed during an emergency evacuation

Comment:
It is not clearly stated that glass items installed in other compartments (non-TTOL and not on an egress path) need no testing. This could be misunderstood as needing CRIs to be written to address those glass items when installed. Clarification is recommended.

Requested change and proposed text
(2) Large glass items installed in compartments that are not occupied during taxiing, take-off and landing and that may not be traversed during an emergency evacuation can be installed without testing. Other large glass items should meet the following requirements.

response *Not accepted*

See the response to comment 39.

comment *194* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.603 3.2.4:
Only for large glass items which may be stepped or sat on, a load of 222 daN (500 lbs) should be used. This load is to be applied at the most critical point, and on any relevant surface up to 1 m (38 in.) above the floor level (see (4) in Figure 1 below)

Comment:
In the EIR WG NPA, there were two load application pads: one for the application of the stepping loads, and a bigger one for the application of the seating loads. It resulted in lower test efforts being applied to the glass at the locations where passengers were likely to seat but not to step. The proposed NPA requests the use of the stepping load application pad for both the stepping locations and the seating locations. It results in more stringent testing, not supported by any rationale. It is recommended to return to the EIR WG proposal of 2 different pads, which is more in line with existing CRIs and is more representative of the glass loading conditions.

Requested change and proposed text
For large glass items furnishings which can be used as a seat or step, a load of 220 daN (500 lbs) should be used. This load is to be applied at the most critical seating (stepping) point. The seating load is to be applied with seating area typical dimensions of 30 cm x 30 cm (12 in x 12 in). For a stepping area, use a typical dimension of 10 cm x 20 cm (4in x 8in) (see (4) in Figure below).

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response | *Not accepted.*
See the response to comment 61.

comment | *230* comment by: *sabena technics BOD*

§3.2 for abuse loads does not consider the downloads. This is in contradiction with the curve 1 of the figure 1 next page, which legend is "Horizontal Push/Pull, Two Hands, and Downloads". Direction of abuse loads should be clarified.

response | *Accepted.*

A paragraph 'Downloads' has been added, together with a clarification in the introduction to the paragraph on 'loads to be applied', which states: 'Unless it is justified that one or more abuse load cases are not applicable due to the shape/size/location of the glass item making it unlikely or impossible for persons to apply loads in the direction(s) concerned, the following abuse loads should be considered (…)'.

comment | *276* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.603(a), § 1.(1)Extract
(1) A glass panel is considered to be a large glass item if:
(i) the maximum dimension exceeds 51 cm (20 in.);
(ii) the surface area of one side exceeds 0.12 m² (200 in.²); or
(iii) the glass mass exceeds 4 kg.

Comment:
As written, this AMC defines when a glass panel has to be considered as a large glass item, but fails to define when other glass items (which are not panels) are large glass items. This confusion was introduced when the EIR WG proposed NPA was rewritten. It is proposed to return to the EIR WG NPA definitions: criteria (i) and (ii) apply to glass panels only, and criteria (iii) applies to any glass item (panel or not).

Requested change and proposed text:
(1) A glass item is considered to be a large glass item if:
(i) it is a glass panel with a maximum dimension exceeding 51 cm (20 in.);
(ii) it is a glass panel with a surface area of one side exceeding 0.12 m² (200 in.²); or
(iii) it is a glass item which glass mass exceeds 4 kg.

response | *Accepted.*

See the response to comment 111.

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comment *277* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.603(a), § 1.(2)
Extract:
(2) A large glass item should meet the following requirements whenever installed in compartments that may be occupied during taxiing, take-off and landing, or may be traversed during an emergency evacuation

Comment:
It is not clearly stated that glass items installed in other compartments (non-TTOL and not on an egress path) need no testing. This could be misunderstood as needing CRIs to be written to address those glass items when installed. Clarification is recommended.

Requested change and proposed text
(2) Large glass items installed in compartments that are not occupied during taxiing, take-off and landing and that may not be traversed during an emergency evacuation can be installed without testing. Other large glass items should meet the following requirements.

response *Not accepted.*

See the response to comment 39.

comment *278* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.603(a), § 1.(2)
Extract:
Only for large glass items which may be stepped or sat on, a load of 222 daN (500 lbs) should be used. This load is to be applied at the most critical point, and on any relevant surface up to 1 m (38 in.) above the floor level (see (4) in Figure 1 below)

Comment:
In the EIR WG NPA, there were two load application pads: one for the application of the stepping loads and a bigger one for application of seating loads. It resulted in lower test efforts being applied to glass at locations where passengers were likely to sit but not to step. The proposed NPA requests use of stepping load application pad for both step locations and seat locations. It results in more stringent testing, not supported by any rationale. It is recommended to return to the EIR WG proposal of 2 different pads, which is more in line with existing CRIs and is more representative of glass loading conditions.

Requested change and proposed text
For large glass items furnishings which can be used as a seat or step, a load of 220 daN (500 lbs) should be used. This load is to be applied at the most critical seating (stepping) point. The seating load is to be applied with seating area typical dimensions of 30 cm x 30 cm (12

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in x 12 in). For a stepping area, use a typical dimension of 10 cm x 20 cm (4in x 8in) (see (4) in Figure below).

response

Not accepted.

See the response to comment 61.

comment

323 comment by: *GAMA*

Page 32, AMC 25.603(a)1.(1)
As written, this AMC defines when a glass panel has to be considered as a large glass item, but fails to define when other glass items (which are not panels) are large glass items. This confusion was introduced when the EIR WG proposed NPA was rewritten. It is proposed to return to the EIR WG NPA definitions: criteria (i) and (ii) apply to glass panels only, and criteria (iii) applies to any glass item (panel or not).

Requested change and proposed text:

(1) A glass item is considered to be a large glass item if:
(i) it is a glass panel with a maximum dimension exceeding 51 cm (20 in.);
(ii) it is a glass panel with a surface area of one side exceeding 0.12 m² (200 in.²); or
(iii) it is a glass item which glass mass exceeds 4 kg.

Page 32, AMC 25.603(a)1.(2)
"(2) A large glass item should meet the following requirements whenever installed in compartments that may be occupied during taxiing, take-off and landing, or may be traversed during an emergency evacuation"

It is not clearly stated that glass items installed in other compartments (non-TTOL and not on an egress path) need no testing. This could be misunderstood as needing CRIs to be written to address those glass items when installed.

The recommended change should be, "(2) Large glass items installed in compartments that are not occupied during taxiing, take-off and landing and that may not be traversed during an emergency evacuation can be installed without testing. Other large glass items should meet the following requirements."

The words "a" and "testing" in combination is not grammatically correct.

The following is the suggested text:
(i) The glass item should be subjected to, and pass, ball impact testing (see Paragraph 2 below).

The words "an" and "testing" in combination is not grammatically correct.
The following is the suggested text:
(ii) The glass item should be subjected to, and pass, abuse load testing (see Paragraph 3 below).

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response | *Partially accepted.*

See the responses to comments 39, 111 and 163.

comment | *324* comment by: *GAMA*

Page 35, AMC 25.603(a)3.(3.2.4)
"Only for large glass items which may be stepped or sat on, a load of 222 daN (500 lbs) should be used. This load is to be applied at the most critical point, and on any relevant surface up to 1 m (38 in.) above the floor level (see (4) in Figure 1 below)"

In the EIR WG NPA, there were two load application pads: one for the application of the stepping loads, and a bigger one for the application of the seating loads. It resulted in lower test efforts being applied to the glass at the locations where passengers were likely to seat but not to step. The proposed NPA requests the use of the stepping load application pad for both the stepping locations and the seating locations. It results in more stringent testing, not supported by any rationale. It is recommended to return to the EIR WG proposal of 2 different pads, which is more in line with existing CRIs and is more representative of the glass loading conditions.

Requested change and proposed text
"For large glass items furnishings which can be used as a seat or step, a load of 220 daN (500 lbs) should be used. This load is to be applied at the most critical seating (stepping) point. The seating load is to be applied with seating area typical dimensions of 30 cm x 30 cm (12 in x 12 in). For a stepping area, use a typical dimension of 10 cm x 20 cm (4in x 8in) (see (4) in Figure below)."

response | *Not accepted.*

See the response to comment 61.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.785 Seats, Berths,Safety Belts and Harnesses p. 36

comment | *63* comment by: *Andrew Hanley (Jet Aviation)*

The SLRG proposed to include text regarding in-flight only seats and stools (e.g bar stools) however this text has been omitted from the NPA.

JBSC suggest including such text in order to provide clarifications to industry members involved with such installations, particularly regarding stools.

Suggest text (from SLRG proposal):

<u>Seats only available in flight</u>
Seats, available for in-flight use only should be equipped with a seat belt. However, such a belt need only account for the relevant flight load conditions.
Stools, which do not provide sufficient backrest, do not require a seat belt if they may be considered as comparable to standing persons. A return-to-seat sign should be provided for

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	those locations.
response	*Not accepted.* *EASA considered that the installation of stools is still very rare and specific, and that the concept is not mature enough to be addressed adequately in the Certification Specification. It will continue to be addressed on a case-by-case basis.*

comment	*164* comment by: *Bombardier* **Reference NPA AMC 25.75:** Beds, berths or divans convertible into a bed should be equipped with a restraint device (e.g. a belt). Beds, berths etc. that may be occupied by more than one passenger may be equipped with a single belt. **Comment:** It is noted that divans are likely to be equipped with restraints for use when not converted into a bed and that a restraint suitable for use when berthed is also required. Also, since the bed or berth may be occupied by persons who are not passengers, the more generic word “occupant” should be used. The following is the suggested revised text: *Beds, berths or divans convertible into a bed should be equipped with a restraint device (e.g. a belt) for use by the occupant(s) when sleeping. Beds, berths etc. that may be occupied by more than one occupant may be equipped with a single belt.*
response	*Accepted.* *The text has been revised as proposed.*

comment	*325* comment by: *GAMA* **Page 36, AMC 25.785** It is noted that divans are likely to be equipped with restraints for use when not converted into a bed and that a restraint suitable for use when berthed is also required. Also, since the bed or berth may be occupied by persons who are not passengers, the more generic word “occupant” should be used. The following is the suggested text: “Beds, berths or divans convertible into a bed should be equipped with a restraint device (e.g. a belt) for use by the occupant(s) when sleeping. Beds, berths etc. that may be occupied by more than one occupant may be equipped with a single belt.”
response	*Accepted.* *The text has been revised as proposed.*

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3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.788(a) Installation of Showers p. 36-37

comment *41* comment by: *FAA*

Page 37, Book 2 AMC – Subpart D AMC 25.788

Electrical outlets near showers should have ground fault interrupt circuit.

Include this as part of the AMC.

response *Noted.*

The AMC to CS 25.788(a) only addresses the additional design expectations that are specific to the shower installation, as opposed to the expectations that are generic to the installation of the electrical power outlets in the aeroplane. The specific challenge of the installation of electrical power outlets in the vicinity of showers is related to the risk of water spilling, which is addressed in the AMC through the appropriately remote location of the power outlets and the enclosure of the shower up to the ceiling. This is consistent with the EASA Certification Memorandum CM-ES-001, Issue 01, dated 07/06/2012, on Certification of Power Supply Systems for Portable Electronic Devices, in which generic guidance on the certification of power supply systems dedicated to portable electronic devices (including the fault protection requirements) can be also found.

comment *64* comment by: *Andrew Hanley (Jet Aviation)*

§ (d)

The wording “in the vicinity of” is not adequately defined with regards to §(iii). §(i) and (ii) have specific distance criteria whereas (iii) is reliant upon the word vicinity which is ambiguous.

Suggested text change:
(d) If electrical power outlets are installed **within 0.6m** of the shower cubicle, all following requirements should be fulfilled:

response *Partially accepted.*

The text of the AMC. has been revised and made consistent with the EASA Certification Memorandum CM-ES-001, Issue 01, dated 07/06/2012, on Certification of Power Supply Systems for Portable Electronic Devices.

comment *89* comment by: *LHT DO*

AMC 25.788(a) item (d): The term "in the vicinity" is not clearly defined. The requirement should be re-written to define under what conditions the shower cubicle should be enclosed up to the ceiling and under what conditions the cubicle may be left open on top.

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response | *Partially accepted.*

See the response to comment 64.

comment | *165* comment by: *Bombardier*

Reference NPA AMC 25.788(a):
(d) If electrical power outlets are installed in the vicinity of the shower cubicle, all following requirements should be fulfilled:
…
(iii) the shower cubicle should be enclosed up to the ceiling.

Comment:
The expression “in the vicinity of the shower cubicle” is not defined so the applicability of (iii) is subject to interpretation unlike the cases of (i) and (ii).

The requirement as written could be interpreted to mean that the shower cubicle must be enclosed up to the ceiling anytime there is an outlet in the compartment, regardless of its size.

It is recommended that the text be modified as follows:
(d) If electrical power outlets are installed closer than X m (Y in) from the shower cubicle, all following requirements should be fulfilled: …

response | *Partially accepted.*

See the response to comment 64.

comment | *195* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.788(a)(d):
If electrical power outlets are installed in the vicinity of the shower cubicle, all following requirements should be fulfilled:

Comment:
The wording "in the vincinity of" fails to be defined accurately, while it implies conditions which are somewhat significant. By consistency with sub-§ (ii), the distance of 60 cm should be used.

Requested change and proposed text
If electrical power outlets are installed within 0.6 m of the shower cubicle, all following requirements should be fulfilled:

response | *Partially accepted.*
See the response to comment 64.

comment *279* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.788(a), § (d)
Extract:
If electrical power outlets are installed in the vicinity of a shower cubicle, all following requirements should be fulfilled:

Comment:
The wording "in the vincinity of" fails to be defined accurately, while it implies conditions which are somewhat significant. By consistency with sub-§ (ii), the distance of 60 cm should be used.

Requested change and proposed text
If electrical power outlets are installed within 0.6 m of a shower cubicle, all following requirements should be fulfilled:

response *Partially accepted.*

See the response to comment 64.

comment *326* comment by: *GAMA*

Page 37, AMC 25.788(a)
The expression “in the vicinity of the shower cubicle” is not defined so the applicability of (iii) is subject to interpretation unlike the cases of (i) and (ii).
The requirement as written could be interpreted to mean that the shower cubicle must be enclosed up to the ceiling anytime there is an outlet in the compartment, regardless of its size.

It is recommended that the text be modified as follows:
(d) If electrical power outlets are installed closer than .6 m from the shower cubicle, all following requirements should be fulfilled: …

response *Partially accepted.*

See the response to comment 64.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.788(b) Large Display Panels p. 37-40

comment *90* comment by: *LHT DO*

No documentation related to potential adverse health effects on cabin occupants should be required if it is shown that the display panel withstands all mechanical tests without damage that would release chemical substances in to the cabin.

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	Due to the used technologies and the possible risks, this requirement should be limited to plasma screens only.
response	*Accepted.* *The text has been revised in line with the intent of this comment.*

comment	*166* comment by: *Bombardier* **Reference NPA AMC 25.788(b) 1. General:** (ii) the large display panel should be subjected to, and pass, an abuse load testing (see Paragraph 3 below). ... (iv) if the large display panel incorporates glass, it should be subjected to, and pass, a ball impact testing (see Paragraph 2 below); ... Documentation should be provided from medical authorities which substantiates that the type and amount of chemical substances released into the cabin in case of failure of the screen would not result in adverse health effects on cabin occupants. The specific cabin volume may be considered. As an acceptable substantiation is considered if each installed glass screen has been shown to comply with... **Comment:** Grammatical errors.
response	*Accepted.* *The grammatical errors have been corrected.*

comment	*327* comment by: *GAMA* **Page 37, AMC 25.788(b)** The words “an” and “testing” in combination is not grammatically correct. The following is the suggested text: (ii) the large display panel should be subjected to, and pass, abuse load testing (see Paragraph 3 below). The words “a” and “testing” in combination is not grammatically correct. The following is the suggested text: (iv) if the large display panel incorporates glass, it should be subjected to, and pass, ball impact testing (see Paragraph 2 below); **Page 38, AMC 25.788(b)** The proposed text in the first paragraph in (1) is grammatically incorrect.
response	*Accepted.* *The grammatical errors have been corrected.*

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3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.807 Emergency Exits p. 40-41

comment *108* comment by: *Airbus Operations GmbH*

Airbus Comment No. 1bis on:
- CS 25.807(e)(2) on maximum seat to exit distance
- AMC 25.807

Note: This comment is related to 2 sections and will be placed into the CRT database at both positions.

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 22/81, CS 25.807(e)(2)
Page 40/81, AMC 25.807

2. PROPOSED TEXT / COMMENT:

2.1. Airbus recommends to cancel the addition of paragraph (2) to CS 25.807(e) and to revert back to CS 25.807(e) as written in the current CS-25.
2.2. Airbus would accept the transfer of the text of this proposed section (e)(2) into AMC 25.807, provided it is changed as follows: *(new text underlined , deleted text ~~strikethrough~~*)
AMC 25.807
Emergency exits
(…)
1. General
FAA Advisory Circular 25.807-1 'Uniform Distribution of Exits', dated 08/13/90 is accepted by the Agency as providing acceptable means of compliance with CS 25.807(e).
2. Seat-to-exit distance
2.1. On a single-deck aeroplane, each passenger seat approved for use during taxiing, take-off or landing should be located in a way that:
(i) it is within 9.14 m (30 ft) from the nearest emergency exit on one side of the fuselage , and within 13.72 m (45 ft) from the nearest emergency exit on the other side of the fuselage; and
(ii) the occupant of that seat would not have to traverse any point in the cabin that is more than 9.14 m (30 ft) from the nearest emergency exit on one side of the fuselage and more than 13.72 m (45 ft) from the nearest emergency exit on the other side of the fuselage to reach any emergency exit.
2.2. On a multiple-deck aeroplane, applicability of the above criteria should take into account the possibilities of movement between decks offered by the location and number of stairs connecting the decks.
2.3. When calculating the distance from a passenger seat to an exit, ~~as required by CS 25.807(e)(2),~~ this distance should be taken as… *[no change to the end of the paragraph]*
3. Aeroplanes with an approved passenger seating configuration of 19 or less
3.1. For such aeroplanes ~~with an approved passenger seating configuration of 19 or less~~, only one pair of emergency exits is required. However, such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h).
3.2. Such aeroplanes would not, however, be required to meet the 18.3-m (60-feet) rule of CS 25.807(f)(4). The distance between each passenger seat and the nearest available exit may be determined considering all available exits, including the ones addressed by CS 25.807(h).

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3. RATIONALE / REASON / JUSTIFICATION for the Comment:
In addition to a regrettable disharmonization with FAR § 25.807(e), the proposed introduction of CS 25.807(e)(2) introduces additional prescriptive requirements to a § that already basically consists in a set of highly prescriptive requirements that drive the design of airliner cabins.
This set of requirements simply adds other arbitrary design constraints on top of the 60ft rule that is itself recognized as fully arbitrary.
One can also see in the nature of the proposed change a contradiction with the expressed willingness of EC and EASA to move towards performance-based instead of prescriptive requirements. This intent clearly appears in the EU Commission proposal for a new Basic Regulation, published on 7 December 2015.
The proposed text might be offered as an acceptable means of compliance with CS 25.807(e), provided it is changed to recognize the additional egress possibilities resulting from the use of stairs in multiple-deck aeroplanes. It is the main purpose of our proposal for AMC 25.807, which in addition includes editorial work for clarification.

response *Partially accepted.*

See the response to comment 7.

comment *113* comment by: *Airbus Operations GmbH*

Airbus Comment No. 10 on:
- AMC 25.807(e)(2) on seat to exit distance

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 40/81, AMC 25.807

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

When calculating the distance from a passenger seat to an exit, as required by CS 25.807(e)(2), this distance should be taken as the total longitudinal distance (i.e. as measured parallel to the aeroplane's longitudinal axis) that the escapee should cover in order to get to the exit in question (i.e. the distance calculated should take into account all required changes in direction of movement but measured only longitudinally). As starting point, the front edge of the seat bottom cushion is to be taken (for forward or aft-facing seats), and as end point, the nearest exit edge. For seats set at an angle of more than 18 degrees with respect to the aeroplane's longitudinal axis, the front edge of the seat bottom cushion at the seat centre line is to be taken as starting point.

Airbus Comment:

The portion of the text indicating
"For seats set at an angle of more than 18 degrees with respect to the aeroplane's longitudinal axis, the front edge of the seat bottom cushion at the seat centre line is to be taken as starting point."
may be removed by modifying the above sentence as follows: *(new/revised text underlined)*

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"When calculating the distance from a passenger seat to an exit, as required by CS 25.807(e)(2), this distance should be taken as the total longitudinal distance (i.e. as measured parallel to the aeroplane's longitudinal axis) that the escapee should cover in order to get to the exit in question (i.e. the distance calculated should take into account all required changes in direction of movement but measured only longitudinally). As starting point, the front edge of the seat bottom cushion at the seat centreline is to be taken (for forward, angled, side or aft-facing seats), and as end point, the nearest exit edge.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Simplification

response

Accepted.

The text has been revised in line with the intent of this comment.

comment

167 comment by: *Bombardier*

Reference NPA AMC 25.807:
When calculating the distance from a passenger seat to an exit, as required by CS 25.807(e)(2), this distance should be taken as the total longitudinal distance (i.e. as measured parallel to the aeroplane's longitudinal axis) that the escapee should cover in order to get to the exit in question (i.e. the distance calculated should take into account all required changes in direction of movement but measured only longitudinally)…

Comment:
The guidance material appears to contradict the text of the proposed requirement CS 25.807(e)(2)(i) which is understood to consider an absolute measure of longitudinal distance from the exit.
The guidance appears applicable to CS 25.807(e)(2)(ii) only, which is understood to take into consideration obstructions (eg conference tables or partitions) in the cabin that the occupant must navigate to actually reach the exits.

response

Partially accepted.

The AMC text has been revised to clarify the guidance on how to calculate the distances.

comment

168 comment by: *Bombardier*

Comment NPA AMC 25.807:
For aeroplanes with an approved passenger seating configuration of 19 or less, only one pair of emergency exits is required. However, such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h).
Such aeroplanes would not, however, be required to meet the 18.3-m (60-feet) rule of CS 25.807(f)(4). The distance between each passenger seat and the nearest available exit may be determined considering all available exits, including the ones addressed by CS 25.807(h).

Comment:
Applicability of the second paragraph is not clear.

The following is the suggested revised text:

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For aeroplanes with an approved passenger seating configuration of 19 or less, only one pair of emergency exits is required. However, such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h) but not the 18.3-m (60-feet) rule of CS 25.807(f)(4).
The distance between each passenger seat and the nearest available exit may be determined considering all available exits, including the ones addressed by CS 25.807(h).

response *Accepted.*

The text has been revised as proposed.

comment *196* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
… such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h).

Comment:
The use of "must" is not adequate in an AMC. It is understood that those additional exits must comply with CS 25.807(h), but an AMC is not the correct place to say it.

response *Not accepted.*

The word 'must' is used here in the context of a reminder that a certain CS requirement still applies. It is appropriate in this context.

comment *280* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.807
Extract:
… such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h).

Comment:
The use of "must" is not adequate in an AMC. It is understood that those additional exits must comply with CS 25.807(h), but an AMC is not the correct place to say it.

response *Not accepted.*

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See the response to comment 196.

comment *328* comment by: *GAMA*

Page 40, AMC 25.807
The guidance material appears to contradict the text of the proposed requirement CS 25.807(e)(2)(i) which is understood to consider an absolute measure of longitudinal distance from the exit.

The guidance appears applicable to CS 25.807(e)(2)(ii) only which is understood to take into consideration obstructions (eg conference tables or partitions) in the cabin that the occupant must navigate to actually reach the exits.

"… such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h)."

The use of "must" is not adequate in an AMC. It is understood that those additional exits must comply with CS 25.807(h), but an AMC is not the correct place to say it.

response *Partially accepted.*

See the responses to comments 167 and 196.

comment *329* comment by: *GAMA*

Page 41, AMC 25.807
The applicability of the second paragraph is not clear.

The following is the suggested text:
"For aeroplanes with an approved passenger seating configuration of 19 or less, only one pair of emergency exits is required. However, such aeroplanes may have additional exits installed, which must then comply with CS 25.807(h) but not the 18.3-m (60-feet) rule of CS 25.807(f)(4).

The distance between each passenger seat and the nearest available exit may be determined considering all available exits, including the ones addressed by CS 25.807(h)."

AMC25.807 uses a measurement from the front of a seat cushion. EASA should provide an explanation of why no use the SRP for each seat as this is better defined and controlled compared to that of the front edge of a cushion.

response *Accepted.*

See the responses to comments 113 and 168.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.812(b)(1) Emergency Lighting p. 41-44

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comment *42* comment by: *FAA*

Pages 42-45, Book 2 AMC – Subpart D AMC 25.812(b)(2)

EASA and FAA have applied different standards for symbolic exit sign design. Some of these differences include the colour green that is used and the size and shape of the arrows. Refer to FAA document DOT/FAA/AM-14/3, "Identification and Comprehension of Symbolic Exit Signs for Small Transport Category Airplanes." The symbolic green running man standard in GAMA Publication 15 is acceptable to the FAA.

We would like to work toward harmonized acceptable means of compliance between EASA and FAA concerning symbolic exit sign design standards before this rule is finalized.

response *Partially accepted.*

EASA warmly welcomes harmonisation efforts with the FAA regarding the use of symbolic signs. As a follow-up of this comment, EASA and FAA had discussions on how to best harmonise the EASA and FAA requirements, and the resulting evolution of the proposed amendment to AMC 25.812(b)(1) and (2) were presented to the review group and accepted. The AMC now quotes ISO 7010 which defines an internationally agreed green colour for safety signs and limits on the shape of supplemental arrows have been included.

comment *65* comment by: *Andrew Hanley (Jet Aviation)*

The current AMC allows for the installation of 38mm high lettering without needing to compute viewing distances. The new AMC removes the 38mm high letter size, leaving only the viewing calculation method; this is creating an unnecessary burden

Suggest rewording the AMC so that the continued use of 38mm high letters is acceptable without needing to calculate viewing distances.

response *Not accepted.*

As the use of the distance formula is extremely simple, EASA sees no reason to include a direct acceptance for the 38mm high text.

comment *66* comment by: *Andrew Hanley (Jet Aviation)*

extract:
(1)—… - emergency exit signs using letters should have letters that are at least 50 % as high as the overall height of the sign (**but see Note 2 below**) and

Note 1 is equally as applicable.

Suggested text change:
…(but see **Note 1 and** Note 2 below)…

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response *Partially accepted.*

It is agreed that note 1 was equally applicable. However, the AMC text has been extensively reworded (see response to comment 42) and the point raised by this comment no longer exists.

comment *68* comment by: *Andrew Hanley (Jet Aviation)*

Extract:

For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D_1 and D_2, as calculated above) should be at least **twice** the width of the cabin.

Requiring the viewing distance to be based on a distance twice the width of the cabin is not logical since a viewing distance greater than the width of the cabin is not possible.

Suggested text change:
…should be at least ~~twice~~ the width of the cabin.

response *Partially accepted.*

It is acknowledged that basing the viewing distance on a distance twice the width of the cabin did not appear to be logical. However, the purpose was to avoid signs that would be unnecessarily small and would thus not provide a good visual impact, even though the sign might meet the requirements of the minimum viewing distance formula. The AMC text has been reworded as an outcome of comment 42, and the final text now proposes a different minimum criteria.

comment *91* comment by: *LHT DO*

The current acceptable method of demonstrating compliance with the requirement of CS 25.812(b)(1) by defining a minimum size (letters 38mm high) should remain valid.

Calculation the maximum viewing distance may be a further option to show compliance.

response *Not accepted*

As the use of the distance formula is extremely simple, EASA sees no reason to include a direct acceptance for the 38mm high text.

comment *92* comment by: *LHT DO*

EASA is kindly requested to explain for an emergency exit sign required by CS 25.811(d)(2)

why the calculated maximum allowable viewing distance should be at least twice the width of the cabin.

Current interpretation is that the emergency exit sign should be visibility at a distance of at least equal to the width of the fuselage.

It is proposed to change to AMC to a minimum of equal to the width of the fuselage.

response

Partially accepted.

See the response to comment 68.

comment

169 comment by: *Bombardier*

Comment NPA AMC 25.812(b)(1):
emergency exit signs using letters should have letters that are at least 50 % as high as the overall height of the sign …

Comment:
The requirement that the height of the letters be a function of the actual height of the sign unnecessarily complicates the design and certification of exit sign assemblies since the minimum letter height will vary from one sign to another.

Consider the following examples:

- Combined CS 25.811(d)(1) and (d)(2) signs are very often wedge shaped and do not necessarily have a constant or easily defined height
- CS 25.811(d)(1) and (d)(3) signs installed on partitions may have vertical text instead of horizontal text – in this case the height of the letters cannot be 50% of the height of the actual sign
- It is common for exit sign specifications to require that the sign be slightly larger than the minimum required (eg 2.1 inches) in order to ensure the installed sign meets the minimum height requirements – if signs have different heights then the letters could be of different height from one sign to another

The following is the suggested revised text:
emergency exit signs using letters should have letters that are at least 50 % as high as the height of the sign used to determine the maximum allowable viewing distance …
This allows for the installer to select a nominal height for maximum allowable viewing distance for all installed exit signs, such as 2 inches, which would result in a minimum letter height of 1 inch for all signs, regardless of whether or not they are more than 2 inches high.

response

Partially accepted.

The AMC text has been reworded as an outcome of comment 42, and the final text takes into account this remark.

comment

170 comment by: *Bombardier*

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Reference NPA AMC 25.812(b)(1):
Egress paths to be assessed should be:
(1) any possible path from a seat that can be occupied during taxiing, take-off and landing to any emergency exit; and
(2) any possible path from a point adjacent to any emergency exit to any other emergency exit.

Comment:
The proposed guidance does not account for seats not in the passenger compartment (eg cockpit) nor the fact that the airplane may be equipped with flight crew emergency exits for which the egress path need not be indicated.

The following is the suggested revised text:
Egress paths to be assessed should be:
(1) any possible path from a seat in the passenger compartment that can be occupied during taxiing, take-off and landing to any passenger emergency exit; and
(2) any possible path from a point adjacent to any passenger emergency exit to any other passenger emergency exit.

response *Accepted.*

The text has been revised to satisfy the points made by this comment.

comment *197* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
Title says: Emergency Lighting

Comment:
The title of CS 25.812(b) is "Emergency exit signs", and this AMC only deals with emergency exit signs. For clarity, the AMC title should changed accordingly.

Requested change and proposed text
Emergency exit signs

response *Not accepted*

The purpose of this requirement is to ensure that the emergency exit signs are visible even in low visibility/dark conditions. Moreover, the title of CS 25.812 is: 'Emergency lighting'.

comment *198* comment by: *Dassault-Aviation*

Dassault Aviation comment

Comment CS25.812(b)(1)(1):

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The new AMC makes it necessary to compute a viewing distance for each and every sign, whatever the letter height, while the existing AMC considers the letter sign with 38 mm high letters as acceptable.

Requested change and proposed text
Reword the AMC so that when using letter signs with 38 mm high letters, there is no need to further demonstrate any sign maximum viewing distance.

response

Not accepted.

As the use of the distance formula is extremely simple, EASA sees no reason to include a direct acceptance for the 38mm high text.

comment

199 comment by: *Dassault-Aviation*

Attachment **#1**

Dassault Aviation comment
Extract AMC25.812(b)(1)(2):
… the symbolic element incorporating the 'running man' should be at least 80 % as high as the overall height of the sign ...
Comment:
Although the recommendation is understood, it would result in the unacceptability of several approved signs such in attachment.

When there are good reasons to deviate from this 80 % ratio, the sign acceptability should be conditionned by the running man maximum viewing distance.
Requested change and proposed text

Add a sentence : "for the signs which cannot comply with this 80% recommendation, for instance signs showing an arrow above or below the running man, the acceptability of the sign will depend upon the maximum viewing distance calculated using an overall sign height of 125 % the height of the running man.

response

Partially accepted.

The AMC text has been reworded as an outcome of comment 42, and the final text takes into account this remark..

comment

200 comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract CS25.812(b)(1)(2):
For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least twice the width of the cabin.

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Comment:
Current interpretation is that the emergency exit sign should be visible at a distance equal to the width of the fuselage. It is based on logic and we are not aware of any adverse service experience that would require to increase this distance. Consequently, the change to twice the width of the fuselage is not understood and not agreed.

Requested change and proposed text
For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least the width of the cabin.

response *Partially accepted.*

See the response to comment 68.

comment *229* comment by: *ATR certification office*

ATR concurs with the new wording introduced in the AMC 25.812 (b)(1) which is now clearer, less ambiguous and adapted also for symbolic exit signs.

ATR would like to comment on the acceptable design of the symbolic exit signs.

1. ATR has recently developed and EASA has certified (mid 2015) a symbolic exit sign using guidance given in the AMC.812(b)(1) of the CS25 Amendment 11 (**white running man aside of the door**). These symbolic exit signs are no more considered in the *examples of acceptable designs of symbolic exit signs* as per the amended AMC 25.812(b)(1) and AMC 25.812 (e)(2) introduced by this NPA. ATR would like to know the reasons leading the Agency to remove those exit signs from the examples of the acceptable designs. Moreover, ATR wonders if those designs are still considered by EASA as acceptable for future developments.
2. The foreign validation of the pictogram exit signs is usually an issue as each authority may have its own definition of an acceptable pictogram exit sign. The large panel of possibilities regarding the design of these pictograms (location of the running man related to the door, shape of the running man, direction of the running man,…) has led several manufacturers to redesign an already EASA approved exit sign in order to make it capable of being validated by foreign authorities. Consequently, ATR suggestion is that the design of symbolic exit signs should be effectively and completely harmonized with the main foreign authorities (especially FAA) in order to provide universally accepted guidance to the manufacturers and to avoid additional cost due to a re-design activity for foreign validation.

response *Noted.*

1. When the option of using symbolic emergency exit signs was first introduced into CS 25, it was considered that either style of sign would be acceptable, i.e. 'man in the doorway' or

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'man/arrow/separate doorway'. However, after some experience EASA considered the former style to be superior, for two reasons:
- it provides a better visual message when used in a small format such as in low level floorpath marking exit 'identifiers', and
- it is the only format for which the FAA has performed testing, and thus allowing acceptance via ESF.
Existing EASA approved designs utilising the latter style remain acceptable. If an applicant were to prefer the latter style for future designs, EASA may accept this. NOTE: The new AMC text is only one way to show compliance.

2. As explained above, the fact that an authority other than EASA would limit their appraisal of symbolic emergency exit signs to one particular style was not predicted by EASA. This being the case, EASA recognises the need for harmonisation and decided to retain the 'man in the doorway' graphic.

comment *281* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.812(b)(1)
Extract:
Title says: Emergency Lighting

Comment:
The title of CS 25.812(b) is "Emergency exit signs", and this AMC only deals with emergency exit signs. For clarity, the AMC title should chang accordingly.

Requested change and proposed text
Emergency exit signs

response *Not accepted.*

The purpose of this requirement is to ensure that the emergency exit signs are visible even in low visibility/dark conditions. Moreover, the title of CS 25.812 is: 'Emergency lighting'.

comment *282* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.812(b)(1), §(1)
Comment:
The new AMC makes it necessary to compute a viewing distance for each and every sign, whatever the letter height, while the existing AMC considers the letter sign with 38 mm high letters as acceptable.

Requested change and proposed text

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Reword AMC so that when using letter signs with 38 mm high letters, there is no need to further demonstrate any sign maximum viewing distance.

response *Not accepted.*

See the response to comment 65.

comment *283* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.812(b)(1), §(2)
Extract:
… the symbolic element incorporating the 'running man' should be at least 80 % as high as the overall height of the sign ...

Comment:
Although the recommendation is understood, it would result in the unacceptability of several approved signs such as this one:

When there are good reasons to deviate from this 80 % ratio, sign acceptability should be conditionned by the running man maximum viewing distance.

Requested change and proposed text
Add a sentence : "for signs which cannot comply with this 80% recommendation, for instance signs showing an arrow above or below the running man, acceptability of the sign will depend upon the maximum viewing distance calculated using an overall sign height of 125 % the height of the running man.

response *Partially accepted.*

The AMC text has been reworded as an outcome of comment 42, and the final text takes into account this remark.

comment *284* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.812(b)(1), §(2)
Extract:
For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least twice the width of the cabin.

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Comment:
Current interpretation is that emergency exit sign should be visibility at a distance equal to the width of the fuselage. It is based on logic and we are not aware of any adverse service experience that would require to increase this distance. Consequently, the change to twice the width of the fuselage is not understood and not agreed.

Requested change and proposed text
For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least the width of the cabin.

response

Partially accepted.

See the response to comment 68.

comment

330 comment by: *GAMA*

Page 41, AMC 25.812(b)(1)
The title of CS 25.812(b) is "Emergency exit signs", and this AMC only deals with emergency exit signs. For clarity, the AMC title should change accordingly.
The requirement that the height of the letters be a function of the actual height of the sign unnecessarily complicates the design and certification of exit sign assemblies since the minimum letter height will vary from one sign to another.

The following are options for suggested text:
“emergency exit signs using letters should have letters that are at least 50 % as high as the height of the sign used to determine the maximum allowable viewing distance …”

This allows for the installer to select a nominal height for maximum allowable viewing distance for all installed exit signs, such as 2 inches, which would result in a minimum letter height of 1 inch for all signs, regardless of whether or not they are more than 2 inches high.

Or reword the AMC so that when using letter signs with 38 mm high letters, there is no need to further demonstrate any sign maximum viewing distance.

response

Partially accepted.

The AMC text has been reworded as an outcome of comment 42, and the final text also takes into account this remark.

comment

331 comment by: *GAMA*

Page 41, AMC 25.812(b)(1)
The title of CS 25.812(b) is "Emergency exit signs", and this AMC only deals with emergency exit signs. For clarity, the AMC title should change accordingly.
The requirement that the height of the letters be a function of the actual height of the sign

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unnecessarily complicates the design and certification of exit sign assemblies since the minimum letter height will vary from one sign to another.

The following are options for suggested text:
"emergency exit signs using letters should have letters that are at least 50 % as high as the height of the sign used to determine the maximum allowable viewing distance …"

This allows for the installer to select a nominal height for maximum allowable viewing distance for all installed exit signs, such as 2 inches, which would result in a minimum letter height of 1 inch for all signs, regardless of whether or not they are more than 2 inches high.

Or reword the AMC so that when using letter signs with 38 mm high letters, there is no need to further demonstrate any sign maximum viewing distance.

response *Duplicated comment: See the response to comment 330.*

comment *332* comment by: *GAMA*

Page 43, AMC 25.812(b)(1)
"For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least twice the width of the cabin."

Current interpretation is that the emergency exit sign should be visibility at a distance equal to the width of the fuselage. It is based on logic and we are not aware of any adverse service experience that would require to increase this distance. Consequently, the change to twice the width of the fuselage is not understood and not agreed.

Requested change and proposed text

"For an emergency exit sign required by CS 25.811(d)(2), the maximum allowable viewing distance of the sign (i.e. the lower of D1 and D2, as calculated above) should be at least the width of the cabin."

response *Partially accepted.*

See the response to comment 68.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.812(b)(2) Emergency Lighting p. 44-45

comment *171* comment by: *Bombardier*

Reference NPA AMC 25.812(b)(2):
… the letters should be at least 50 % as high as the overall height of the sign …

Comment:
As discussed in more detail in the first comment on AMC 25.812(b)(1), the requirement that the height of the letters be a function of the actual height of the sign unnecessarily complicates the design and certification of exit sign assemblies since the minimum letter height will vary from one sign to another.

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CS 25.812(b)(2) provides for the installation of emergency exit signs that have an initial brightness that is substantially lower than what is required per CS 25.812(b)(1); for this reason and because the aircraft is likely to be relatively small, a maximum allowable viewing distance is not assessed for each sign.

Given the above, it is recommended that the letters should be at least 51 mm (2 inches) high as required before amendment 3.

response *Partially accepted.*

The AMC text has been reworded as an outcome of comment 42, and the final text takes into account this remark.

comment *172* comment by: *Bombardier*

Reference NPA AMC 25.812(b)(2):
The emergency exit sign should have a contrast between the brightest and darkest elements of at least 10:1.

Comment:
CS 25.812(b)(2) provides for the installation of emergency exit signs that are not electrically illuminated and an initial brightness that is substantially lower than what is required per CS 25.812(b)(1).

Since the requirement has never been codified for these signs (recall that earlier amendments of CS 25.812(b)(1) included a requirement for contrast between the letters and background), it is unlikely that any self-illuminated sign has qualification data to support such a compliance finding and it is possible that such signs cannot meet the 10:1 contrast.

Therefore, it is recommended that if retained, the guidance apply to electrically illuminated signs only.

The following is the suggested revised text:
Electrically illuminated emergency exit signs should have a contrast between the brightest and darkest elements of at least 10:1.

response *Partially Accepted.*

Upon reviewing the history of the 10:1 contrast standard it can be seen that prior to CS-25 Amendment 3, this requirement only applied to emergency exit signs required by CS 25.811(d)(1) and CS 25.811(d)(2). These signs are also required to be internally electrically illuminated (ref. CS 25.812(b)(1)(i)).

No other emergency exit signs (i.e. those required by CS 25.811(d)(3) or any sign installed on an aeroplane with a passenger seating configuration of 9 seats or less (ref. CS 25.812(b)(2)) were required to meet the 10:1 contrast standard or to be electrically illuminated (i.e. self-illumination is acceptable).

At Amendment 3 to CS-25, the option to utilise a universal symbol (i.e. the 'running man') for emergency exit signs was introduced and this contrast requirement was moved to AMC due

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to a universal symbol's background being the area of lower brightness (i.e. the coloured green area) and thus the limit was changed to 1:10 for these signs. The additional text needed to cover this was considered better placed in the AMC. However, the applicability of the 1:10 contrast limit also covered symbolic signs as required by CS 25.811(d)(3) and symbolic signs covered by CS 25.812(b)(2). The applicability of the contrast limit remained unaltered for text based signs.

EASA has reviewed this change in applicability of the 10:1 contrast limit at CS-25 Amendment 3 and has concluded that it was not required. Therefore, the text of the AMC will be revised to reinstate the applicability of the contrast limit to emergency exit signs required by CS 25.811(d)(1) and CS 25.811(d)(2) only. These signs are required to be internally electrically illuminated and so the commentator's request will be satisfied.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.812(l)(1) Transverse Separation of the Fuselage p. 45-46

comment *93* comment by: *LHT DO*

LHT proposes to take the opportunity and include clear definition of the width of the transverse separation zone.

Alternatively, this should be considered to be defined and included in a future CS25 amendment.

response *Not accepted.*

This has not been addressed by the rulemaking group as no need was identified. No definition is proposed in the comment. Moreover, the introduction of a definition would need to be harmonised with other authorities. If the need for clarification is confirmed, this could be a candidate item for a future amendment to CS-25.

comment *173* comment by: *Bombardier*

Reference NPA AMC 25.812(l)(1):
Within CS 25.812(l)(1), the phrase 'in addition to the lights that are directly damaged by the separation' means that when calculating the percentage of electrically illuminated emergency lights rendered inoperative by the fuselage separation, the number of lights whose function is lost due to loss of power or loss of control input to the lights should be divided by the total number of electrically illuminated emergency lights installed. The lights that are directly damaged by the fuselage separation should not be included in total in the numerator of the calculation, but only those whose function is lost due to loss of power and/or control. The denominator should be the total of all electrically illuminated emergency lights installed.

Comment:
It is understood that compliance with requirement is evaluated by considering all emergency lights required per CS 25.812 and not just internal emergency lights; since the rationale for this is not entirely clear, it would be appreciated if an explicit statement could be included in the amended guidance.

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The following is the suggested revised text:
Within CS 25.812(l)(1), the phrase 'in addition to the lights that are directly damaged by the separation' means that when calculating the percentage of electrically illuminated emergency lights rendered inoperative by the fuselage separation, the number of internal and external lights whose function is lost due to loss of power or loss of control input to the lights should be divided by the total number of internal and external electrically illuminated emergency lights installed …

response

Not accepted.

CS 25.812 (l)(1) refers to the 'all electrically illuminated emergency lights required by this paragraph', thus to the lights required by CS 25.812. This explicitly includes internal and external emergency lights.

comment *333* comment by: *GAMA*

Page 45, AMC 25.812(l)(2)
It is understood that compliance with requirement is evaluated by considering all emergency lights required per CS 25.812 and not just internal emergency lights; since the rationale for this is not entirely clear, it would be appreciated if an explicit statement could be included in the amended guidance.

The following is the suggested text:
Within CS 25.812(l)(1), the phrase 'in addition to the lights that are directly damaged by the separation' means that when calculating the percentage of electrically illuminated emergency lights rendered inoperative by the fuselage separation, the number of internal and external lights whose function is lost due to loss of power or loss of control input to the lights should be divided by the total number of internal and external electrically illuminated emergency lights installed …

response

Not accepted.

See the response to comment 173.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.813(c) Emergency Exit Access and Ease of Operation p. 46

comment *69* comment by: *Andrew Hanley (Jet Aviation)*

To improve clarity, it is suggested to indicate opening from the outside should be assessed with the minor obstruction in place.

Suggested text change:
Ease of opening from the outside should also be assessed **with the minor obstruction in place**.

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response | *Accepted.*

The requested text change has been made.

comment | *94* comment by: *LHT DO*

Proposed text change for clarification: "Ease of opening from the outside should also be assessed with the minor obstruction in place."

response | *Accepted*

The requested text change has been made.

comment | *174* comment by: *Bombardier*

Reference NPA AMC 25.813(c):
… Ease of opening from the outside should also be assessed …

Comment:
When assessing opening from the outside, it must be assumed that the item which meets the intent of minor obstruction remains in place (ie has not been moved by a person inside the aircraft).

The following is the suggested revised text:
… Ease of opening from the outside should also be assessed with the minor obstruction in place …

response | *Accepted.*

The requested text change has been made.

comment | *201* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC25.813(c)9:
Ease of opening from the outside should also be assessed.

Comment:
For clarity, it is recommended to indicate that the opening from the outside should be assessed with the minor obstruction in place.

Requested change and proposed text
Ease of opening from the outside should also be assessed with the minor obstruction in place.

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response *Accepted.*

The requested text change has been made.

comment *285* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.813 (c) ,§ 9
Extract:
Ease of opening from the outside should also be assessed.

Comment:
For clarity, it is recommended to indicate that opening from outside should be assessed with minor obstruction in place.

Requested change and proposed text
Ease of opening from outside should also be assessed with minor obstruction in place.

response *Accepted.*

The requested text change has been made.

comment *334* comment by: *GAMA*

Page 46, AMC 25.813(c)
When assessing opening from the outside, it must be assumed that the item which meets the intent of minor obstruction remains in place.

The following is the suggested text:
… Ease of opening from the outside should also be assessed with the minor obstruction in place …

response *Accepted.*

The requested text change has been made.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.1365(b) Installation of Cooktops p. 47-48

comment *234* comment by: *Bombardier*

Reference NPA AMC 25.1365(b):
(6) The cooktop should be ventilated with a system independent of the aeroplane cabin and

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cargo ventilation system. Procedures and time intervals should be established to inspect and clean or replace the ventilation system to prevent a fire hazard …

Comment:
The following is the suggested revised text:
(6) The cooktop should be ventilated with a system independent of the aeroplane cabin and cargo ventilation system. Procedures and time intervals should be established to inspect and clean or replace components of the ventilation system to prevent a fire hazard …

response *Accepted*

A text change with the same intent as the proposal has been made.

comment *335* comment by: *GAMA*

AMC – Subpart F
Page 48, AMC 25.1365(b)
The following is the suggested text:
"(6) The cooktop should be ventilated with a system independent of the aeroplane cabin and cargo ventilation system. Procedures and time intervals should be established to inspect and clean or replace components of the ventilation system to prevent a fire hazard …"

response *Accepted*

A text change with the same intent as the proposal has been made.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.1447(c)(1) Equipment Standards for Oxygen-Dispensing Units p. 49

comment *70* comment by: *Andrew Hanley (Jet Aviation)*

§ (7)

It was agreed by the SLRG that an automatic system would not be needed if, for example, it could be demonstrated that the permanent ambient lighting is sufficient. The requirement for an automatic system was dropped in the draft NPA proposed by the SLRG.

Suggested text change:
Sufficient illumination should be provided at each location where supplemental oxygen…

response *Partially accepted.*

The purpose of this AMC is to make sure that there is sufficient illumination, without crew or passenger action, to use the oxygen masks. It was not intended to require the installation of a system that would switch lighting on in case of an oxygen mask drop. As a consequence, the

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situation described by the commentator would not need an additional automatic system. The AMC text has been revised to clarify this.

comment *96* comment by: *LHT DO*

item 7: amend for clarification: if sufficient illumination is already ensured, no further automated action/system should be required.

response *Partially accepted.*

See the response to comment 70.

comment *202* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
Sufficient illumination should be automatically ensured at each location where ..

Comment:
The word "automatically" implies the installation of a system which will trigger the lighting in case oxygen masks fall. This was discussed in the EIR WG, and it was agreed that such system would not be needed if, for instance, it can be demonstrated that the permanent minimum ambiant lighting is sufficient. This consideration for an automated system was eventually dropped.

Requested change and proposed text
Sufficient illumination is provided at each location where ..

response *Partially accepted.*

See the response to comment 70.

comment *286* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.1447(c)(1), § 7
Extract:
Sufficient illumination should be automatically ensured at each location where ..

Comment:
The word "automatically" implies installation of a system which will trigger lighting in case oxygen masks fall. This was discussed in the EIR WG, and it was agreed that such system

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would not be needed if, for instance, it can be demonstrated that permanent minimum ambiant lighting is sufficient. This consideration for an automated system was eventually dropped.

Requested change and proposed text
Sufficient illumination is provided at each location where ..

response

Partially accepted.

See the response to comment 70.

comment *336* comment by: *GAMA*

Page 49, AMC 25.1447(c)(1)(7)
"Sufficient illumination should be automatically ensured at each location where .."

The word "automatically" implies the installation of a system which will trigger the lighting in case oxygen masks fall. This was discussed in the EIR WG, and it was agreed that such system would not be needed if, for instance, it can be demonstrated that the permanent minimum ambient lighting is sufficient. This consideration for an automated system was eventually dropped.

Requested change and proposed text

"Sufficient illumination is provided at each location where .."

response

Partially accepted.

See the response to comment 70.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC 25.1447(c)(3) Equipment Standards for Oxygen-Dispensing Units p. 49

comment *43* comment by: *FAA*

Page 49, AMC 25.1447(c)(3)

Does this mean the person would have to open the door first? Since it is not mentioned, presumably the mask is visible through the door, which is a basic requirement of CS 25.1447. Or, should an aural warning be discussed?

Add guidance to the AMC if the mask is not visible.

response

Accepted.

CS 25.788 (a)(2) requires aural and visual warnings for the shower occupant in the event oxygen use is needed. It is made clear in AMC 25.147(c)(3) that reaching the mask through an

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opened doorway is acceptable. Additional guidance has been added to AMC 25.1447(c)(3) explaining that if this is required, the door should be transparent.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes p. 50-51

comment *71* comment by: *Andrew Hanley (Jet Aviation)*

Extract:
Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance.

Comment:
While monitoring the position of doors leading to dead-end areas is an acceptable mean of compliance to S25.10 (a), this shall not be interpreted as being part of the design requirement. Stating only that specific means of compliance could lead to this being insisted upon, as other AMC are not listed.

There are many examples of these types of doors being certified without any such indication systems. These doors present a lower safety risk and should not be treated the same as doors across evacuation paths.

There are several compensating factors which non-commercial aeroplanes offer (for which this sub-para applies) and other acceptable means of compliance; such as a high degree of passenger familiarity with the cabin configuration and exit locations, floor path marking including arrows to indicate direction away from dead-end areas, cabin crew procedures to prepare cabin for TT&L which ensures those doors are closed, AFMS limitations to close those doors for TT&L etc.

This is an excessive requirement, especially when compared to doors on commercial aeroplanes certified prior CS 25 amendment 12, which allows for doors between passenger compartments and does not require them to be monitored.

Similarly, under FAA exemptions, these types of doors (classified as category 5 doors) are only required to have a placard on both sides of the door.

Suggested text change:
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. ~~Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance.~~

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response *Accepted.*

The complete paragraph dedicated to internal doors that are compliant with CS 25.813(e) has been deleted in the final text.

comment *72* comment by: *Andrew Hanley (Jet Aviation)*

AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes
AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes
The indication (...) the crew to take appropriate action before entering the **approach** phase.

AMC S25.20(b) Access to Type III and IV Emergency Exits
(1) A position monitoring (...) before entering any of the taxiing, take-off, **approach** and landing phases.
(…)
(4) The alerting system (...) triggered at the latest during descent, allowing enough time prior to entering the **approach** phase. The aural and visual alerts should both remain on until the obstacle is properly stowed.

Referring to the approach phase is unrealistic, and far more stringent than the existing special conditions.

For the crew to take appropriate action before entering approach, the alert has to be triggered by the phase preceding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each beginning of descent. It is far too early in the flight, which increases the likelihood that occupants will not follow the door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus losing its attention getting qualities.

An alarm should not be used as a reminder to the crew to execute its duty of preparing the cabin for landing and triggering such system automatically (or manually above 10,000 feet) is a lot too early leading to often triggering the alarm, and thus creating human factor risks of flight crew ignoring the too frequent alarm.

The technical viability for aircraft modifiers to tap into OEM flight management systems to create an automatic warning system can be extremely complex. A more simple solution of adding a manual “approach” switch in the flight deck could be envisaged but as already mentioned, such solutions are adding cabin configuration tasks on to the flight crew with potential of diverting their attention away from their flight duties.

For the reasons given above, it is suggested to remove the “approach” portion of the text.

Suggested text change:
AMC S25.10(a)
AMC S25.10(b)
~~When preparing for landing, the indication should be triggered during the descent phase,~~

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~~early enough to enable the crew to take appropriate action before entering the **approach** phase.~~

AMC S25.20(b)
A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off~~,~~ **~~approach~~** and landing phases.

response

Not accepted.

The mitigations in allowing for cabin interior doors are to be considered as a whole and not in isolation, and obey to a scenario-based logic. The fundamental assumption in recognising a level of safety as specified in the essential requirements of Annex I to Regulation (EC) No 216/2008 is that the obstruction in the egress path will be removed before entering the critical phases of flights (take-off and landing). If this is ensured among all using an alerting system, it shall allow sufficient time for occupants (crew and/or passenger) to act in all probable circumstances and conditions. With regard to the actions to be performed by the crew, it shall also account for the crew workload, which shall be assessed in accordance with the requirements of CS 25.1523 and CS 25.1302. For this reason, it is believed that triggering such an alert during the approach phase would not allow for sufficient time to restore the readiness of the cabin before landing.
The argument that it would not be technically feasible to trigger such an alert before approach is not accepted; it is acknowledged that it might be technically more challenging than the currently widespread solutions but technical solutions do exist.
It is expected that a normal procedure is introduced in the AFM to direct the crew to instruct passengers (or cabin crew, if required) to open the door during descent. It is up to the (S)TC holder when defining the design and building the procedure, and ultimately to the crew, to ensure that sufficient time will be provided between the moment the crew instructs to open the door and the time the alert is triggered, in order to avoid too frequent alerts. This is achievable since the descent phase is much longer than the approach phase.

comment

97 comment by: *LHT DO*

If the aircraft is equipped with doors that are compliant with CS 25.813(e), these doors should not be required being electronically monitored.
For non-commercially operated aircraft, it can be assumed that the passengers are familiar with the aircraft. Therefore the means that are already in place (required placards, the emergency exit path marking and crew-procedures) should provide a adequate level of safety.

response

Accepted.

See also the response to comment 71.

comment

102 comment by: *LHT DO*

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EASA is kindly requested to provide definition of "approach phase".

Requiring the indication to the flight crew already in the descent phase is considered overly stringent. Proper cabin crew procedures will ensure that doors are in their safe position when preparing for landing. If any door is not in its safe position, an indication to the flight crew after entering the approach phase is considered appropriate. This will still allow the cabin crew to take appropriate action if required.

response

Not accepted.

'Approach phase' refers to the phase of flight defined as such in the Aeroplane Flight Manual which has been established in accordance with the aeronautical standards and applicable requirements. In other words, it is required that the indication to the flight crew is triggered if the triggering conditions are met, before the crew follows the normal procedure for approach as indicated in the AFM.

See the response to comment 72.

comment

114 comment by: *Airbus Operations GmbH*

Airbus Comment No. 11 on:
- AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 50/81, Appendix AMC S25.10(a)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

An assessment should be made of the cabin features adjacent to each door in order to ensure that there is sufficient clearance on each side of the doors during all phases of flight such that their frangibility features, as required by S25.10(a)(2), will work as intended. The frangibility should be demonstrated by test using a 5th percentile female, and the resulting aperture should be demonstrated to be large enough for a 95th percentile male to escape.

Airbus Comment:

The indication in the AMC that the frangibility feature be assessed "during all phases of flight" is excessive and not in line with fact the frangibility features are primarily requested for emergency evacuation cases (ie. post take-off or landing phases requiring that the cabin is prepared in its proper taxi, take-off and landing configuration).

While this is true that the cabin features should not be such as to completely prevent the opening of a door, or its frangibility feature, it must also be considered that the obstructing item(s) may be removable without opening first a passageway of the same dimension as for emergency evacuation. For example, it should be acceptable to remove an obstacle preventing to open the door by accessing with its hand, arm or foot to any element on the other side enabling to recover the full opening of the door, or its frangibility feature.

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3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Excessive requirement leading to loss of design flexibility in the close proximity of interior doors.

response *Accepted.*

The text has been revised in line with this comment.

comment *115* comment by: *Airbus Operations GmbH*

Airbus Comment No. 12 on:
- AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 50/81, Appendix AMC S25.10(a)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance.

Airbus Comment:

While monitoring the position of doors leading to a dead-end area is an acceptable mean of compliance to S25.10 (a), this shall not be interpreted as being part of the design requirement.

The suggestion is to remove this last sentence "~~*Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance*~~." to avoid confusion.

Actually, several elements should be considered as being also acceptable means of compliance for doors leading to dead-end zones without a door position monitoring system: the familiarity of the passengers with the cabin layout (here we are on non-commercially operated aeroplanes), and the installation of arrows to privilege an evacuation direction on the floor proximity emergency escape path marking lights should be considered as equally acceptable mean of compliance to not direct passenger to a dead-end area as a monitored closed door.

Finally, care must also be taken to not create an over design constraint by leading to monitor interior doors such as lavatory, or washroom doors which are not monitored on commercially operated aeroplanes.

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3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Excessive requirement leading to monitor each interior door on private-use aeroplane, even in excess to airliners configurations (lavatory doors are not monitored on airliners).

response

Accepted.

See also the response to comment 71.

comment

116 comment by: *Airbus Operations GmbH*

Airbus Comment No. 13 on
AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes
- **AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes**

Note: This comment is related to 2 sections and will be placed into the CRT database at both positions.

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 51/81, Appendix AMC S25.10(a)+(b)
Page 61/81, Appendix AMC S25.20(b)(1)+(4)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes
AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes
The indication provided to the flight crew, as required by S25.10(b)(8), should be triggered without delay if the door is not in the safe position (i.e. open and secured) during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.

AMC S25.20(b) Access to Type III and IV Emergency Exits
(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off, approach and landing phases.
(…)
(4) The alerting system (…). It should be considered that the cabin occupant needs to move within the cabin to reach the deployable item, therefore, the alerting system should be triggered at the latest during descent, allowing enough time prior to entering the approach phase. The aural and visual alerts should both remain on until the obstacle is properly stowed.

Airbus Comment:

The comment is on the new requirement to trigger the door position indicating system "*early enough to enable the crew to take appropriate action before entering the approach phase*",

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or before entering “approach” for the Type III and IV Emergency Exits obstructing items

While the motivation for such requirement may be understandable, there is a potential adverse safety aspect that needs to be clarified by the EASA, or need to remove these portions of the AMCs:
- On the one hand, care must be taken to not develop additional flight crew procedure to address such “early enough” criteria, such procedure being most probably in contradiction with the “Sterile Cockpit Rule” requiring pilots to refrain from non-essential activities during critical phases of flight, normally below 10,000 feet.
- On the other hand, triggering such system automatically (or manually above 10,000 feet) is a lot too early leading to often triggering the alarm, and thus creating human factor risks of flight crew ignoring the too frequent alarm.

For reasons that an alarm should not be used as a reminder to the crew to execute its duty of preparing the cabin for landing, and for reasons that such requirement would generate a higher adverse effect on safety than a true benefit (in diverting the pilots’ attention during critical phases of flight to manage the cabin configuration, in getting them used to the alarm and qualify them as intempestive), these portion of the text should be removed:
- AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes +
AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes: remove
~~*When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.*~~

- AMC S25.20(b) Access to Type III and IV Emergency Exits: remove
A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off~~, approach~~ and landing phases.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
AMC incitation to integrate in the designs some solutions creating more adverse effect on safety than benefit.

response

Not accepted.

See the response to comment 72.

comment *203* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
An assessment should be made of the cabin features adjacent to each door in order to ensure that there is sufficient clearance on each side of the doors during all phases of flight such that their frangibility features, as required by S25.10(a)(2), will work as intended

Comment:
While there is no disagreement on the need to show the door frangibility when installed in

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the cabin, there is strong reservation on the possibility to show that frangibility will work as intended in all phases of flight. On small airplanes, seats can move to many positions during flight, table can deploy, and there will be cases where the door frangibility will not work as intended, and will be more difficult to obtain.

Requested change and proposed text
An assessment should be made of the cabin features adjacent to each door in order to ensure that there is sufficient clearance on each side of the doors such that their frangibility features, as required by S25.10(a)(2), will work as intended

response

Partially accepted.

The text has been revised such that this comment's intent is met.

comment *204* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance.

Comment:
This idea was discussed in the EIR WG, and agreed to be dropped. Although there is some logic behind it, the system complexity that it implies was not considered worth the safety benefit. Therefore, we are surprised to see it reappearing in the final NPA version. We recommend to stick to the EIR WG proposal and remove this whole parapgraph

Requested change and proposed text
Remove the paragraph cited in the extract.

response

Accepted.

See also the response to comment 71.

comment *205* comment by: *Dassault-Aviation*

Dassault Aviation comment

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Extract:
The indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.

Comment:
Refering to the approach phase is unrealistic, and far more stringent than the existing special conditions. Is there any adverse service experience to justify such an increase in the requirement level ? For the crew to take appropriate action before entering approach, the alert has to be trigerred by the phase preceeding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each begining of descent. It is far too early in the flight, which increases the likelyhood that occupants will not follow the door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus loosing its attention getting qualities.

Requested change and proposed text

The indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off and landing flight phases. When preparing for landing, the indication should be triggered early enough to enable the crew to take appropriate action.

response

Not accepted.

See the response to comment 72.

comment *206* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
For the purpose of the briefing required by S25.20(a)(6), a description of the operation of ....

Comment:
Typo: should refer to S25.10, instead of S25.20

Requested change and proposed text
For the purpose of the briefing required by S25.10(a)(6), a description of the operation of ....

response

Accepted.

The text has been revised accordingly.

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comment	*235* comment by: *Bombardier* **Reference NPA AMC S25.10(a):** If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path … **Comment:** The guidance does not consider the case of a door that is compliant with CS 25.813(e) but crosses an egress path (ie cases where basis of certification prohibits doors between passenger compartments). Since Appendix S is being introduced as an amendment to CS-25, this approach is perfectly valid but it does raise the question as to how the provisions of this NPA will be applied to airplanes which have an earlier basis of certification.
response	*Accepted.* *See also answer to comment 71.*

comment	*236* comment by: *Bombardier* **Reference NPA AMC S25.10(a):** If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing … **Comment:** Examples of doors that are compliant with CS 25.813(e) but for which there is no risk of confusion should be provided in order to ensure this guidance is consistently applied. It is Bombardier's position that for a Global Express, if the aft cabin is outfitted as a stateroom that cannot be occupied during taxi, takeoff or landing, there is no risk that the door separating the stateroom from the forward cabin will lead to confusion during emergency egress for the following reasons: • The entry to the aft stateroom is adjacent to the overwing emergency exit which is clearly marked with an illuminated exit sign • The opposite end of the aft stateroom (ie bulkhead and door separating the stateroom from the aft lavatory) is in plain view from the entry to the stateroom • There are no exit signs in the aft stateroom visible from the forward cabin side of the entry • There is only a single aisle down the center of the airplane and it is not practical to have a large compartment on either side of the aisle An example of a door for which there may be risk of confusion would be the door to a large compartment on a wide body airplane that opens to an interconnecting corridor along one side of the airplane.
response	*Accepted.*

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See also the response to comment 71.

comment *237* comment by: *Bombardier*

Reference NPA AMC S25.10(a):
The indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase. Appropriate procedures for crew action, in the event that the door is signalled as being not secured in the safe position, should be established.

Comment:
This is more stringent that what has been accepted for mid cabin doors previously installed on business jets. Furthermore, compliance with this requirement is not practical since it would require a complex algorithm to differentiate between FL changes and decent to landing, especially if there are deviations to the flight plan entered into the Flight Management System.

Since crew action, if required, will not be mandatory until the final approach phase of flight it is suggested that the indication be provided after the airplane is configured for landing (eg flaps or landing gear extended).

response *Not accepted.*

See the response to comment 72.

comment *287* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.10(a)
Extract:
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance.

Comment:
This idea was discussed in the EIR WG, and agreed to be dropped. Although there is some logic behind it, the system complexity implied was not considered worth the safety benefit. Therefore, we are surprised to see it reappearing in the final NPA version. We recommend to stick to the EIR WG proposal and remove this whole parapgraph

Requested change and proposed text
Remove the paragraph cited in extract.

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response *Accepted.*

See also the response to comment 71.

comment *288* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.10(a)
Extract:
Indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.

Comment:
Refering to approach phase is unrealistic, and far more stringent than existing special conditions. Is there any adverse service experience to justify such an increase in requirements? For crew to take appropriate action before entering approach, the alert has to be trigerred by the phase preceeding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each begining of descent. It is far too early in the flight, which increases the likelyhood that occupants will not follow he door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus loosing its attention getting qualities.

Requested change and proposed text
Indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off and landing flight phases. When preparing for landing, the indication should be triggered early enough to enable the crew to take appropriate action.

response *Not accepted.*

See the response to comment 72.

comment *337* comment by: *GAMA*

Page 50, AMC S25.10(a)
The guidance does not appear to consider the case of a door that is compliant with CS 25.813(e) but crosses an egress path (i.e. cases where basis of certification prohibits doors between passenger compartments).

Since Appendix S is being introduced as an amendment to CS-25, this approach is perfectly

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valid but it does raise the question as to how the provisions of this NPA will be applied to airplanes which have an earlier basis of certification.

Examples of doors that are compliant with CS 25.813(e) but for which there is no risk of confusion should be provided in order to ensure this guidance is consistently applied. For some aircraft interior configurations, if the aft cabin is outfitted as a stateroom that cannot be occupied during taxi, takeoff or landing, there is no risk that the door separating the stateroom from the forward cabin will lead to confusion during emergency egress for the following reasons:

- The entry to the aft stateroom is adjacent to the overwing emergency exit which is marked with an illuminated exit sign
- The opposite end of the aft stateroom (i.e. bulkhead and door separating the stateroo the aft lavatory) is in plain view from the entry to the stateroom
- There are no exit signs in the aft stateroom visible from the forward cabin side of the e
- There is only a single aisle down the center of the airplane and it is not practical to large compartment on either side of the aisle

An example of a door for which there may be risk of confusion would be the door to a large compartment on a wide body airplane that opens to an interconnecting corridor along one side of the airplane.

This is more stringent that what has been accepted for mid cabin doors previously installed on business jets. Furthermore, compliance with this requirement is not practical since it would require a complex algorithm to differentiate between FL changes and decent to landing, especially if there are deviations to the flight plan entered into the Flight Management System.

Since crew action, if required, will not be mandatory until the final approach phase of flight it is suggested that the indication be provided after the airplane is configured for landing (e.g. flaps or landing gear extended).

Extract
"An assessment should be made of the cabin features adjacent to each door in order to ensure that there is sufficient clearance on each side of the doors during all phases of flight such that their frangibility features, as required by S25.10(a)(2), will work as intended"

Comment:
While there is no disagreement on the need to show the door frangibility when installed in the cabin, there is strong reservation on the possibility to show that frangibility will work as intended in all phases of flight. On small airplanes, seats can move to many positions during flight, table can deploy, and there will be cases where the door frangibility will not work as intended, and will be more difficult to obtain.

Requested change and proposed text

"An assessment should be made of the cabin features adjacent to each door in order to ensure that there is sufficient clearance on each side of the doors such that their frangibility features, as required by S25.10(a)(2), will work as intended"

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Extract:
"If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(a)(5) is an acceptable means to provide this assurance."

Comment:
This idea was discussed in the EIR WG, and agreed to be dropped. Although there is some logic behind it, the system complexity that it implies was not considered worth the safety benefit. Therefore, we are surprised to see it reappearing in the final NPA version. We recommend to stick to the EIR WG proposal and remove this whole paragraph

Requested change and proposed text

Remove the paragraph cited in the extract.

Extract:
"The indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase. "

Comment:
Referring to the approach phase is unrealistic, and far more stringent than the existing special conditions. Is there any adverse service experience to justify such an increase in the requirement level? For the crew to take appropriate action before entering approach, the alert has to be triggered by the phase preceding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each beginning of descent. It is far too early in the flight, which increases the likelihood that occupants will not follow the door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus losing its attention getting qualities.

Requested change and proposed text

"The indication provided to the flight crew, as required by S25.10(a)(5), should be triggered without delay if the door is not in the safe position during any of the taxiing, take-off and landing flight phases. When preparing for landing, the indication should be triggered early enough to enable the crew to take appropriate action. "

Extract:
"For the purpose of the briefing required by S25.20(a)(6), a description of the operation of ...."

Comment:

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Typo: should refer to S25.10, instead of S25.20

Requested change and proposed text

"For the purpose of the briefing required by S25.10(a)(6), a description of the operation of ...."

response *See the responses to comments 71, 72, 114, 127, 206, 236.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.10(b) Interior Doors on Commercially Operated Aeroplanes p. 51

comment *72* ❖ comment by: *Andrew Hanley (Jet Aviation)*

AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes
AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes
The indication (...) the crew to take appropriate action before entering the **approach** phase.

AMC S25.20(b) Access to Type III and IV Emergency Exits
(1) A position monitoring (...) before entering any of the taxiing, take-off, **approach** and landing phases.
(…)
(4) The alerting system (...) triggered at the latest during descent, allowing enough time prior to entering the **approach** phase. The aural and visual alerts should both remain on until the obstacle is properly stowed.

Referring to the approach phase is unrealistic, and far more stringent than the existing special conditions.

For the crew to take appropriate action before entering approach, the alert has to be triggered by the phase preceding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each beginning of descent. It is far too early in the flight, which increases the likelihood that occupants will not follow the door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus losing its attention getting qualities.

An alarm should not be used as a reminder to the crew to execute its duty of preparing the cabin for landing and triggering such system automatically (or manually above 10,000 feet) is a lot too early leading to often triggering the alarm, and thus creating human factor risks of flight crew ignoring the too frequent alarm.

The technical viability for aircraft modifiers to tap into OEM flight management systems to create an automatic warning system can be extremely complex. A more simple solution of adding a manual "approach" switch in the flight deck could be envisaged but as already mentioned, such solutions are adding cabin configuration tasks on to the flight crew with potential of diverting their attention away from their flight duties.

For the reasons given above, it is suggested to remove the "approach" portion of the text.

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Suggested text change:
AMC S25.10(a)
AMC S25.10(b)
~~When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the **approach** phase.~~

AMC S25.20(b)
A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off~~,~~ ~~**approach**~~ and landing phases.

response *Not accepted.*

See the response to comment 72.

comment *74* comment by: *Andrew Hanley (Jet Aviation)*

Extract:
AMC 25.854 provides guidance on how to determine cabin length.

Cabin length is not a discriminator for this requirement, therefore this sentence is irrelevant.

Suggest deleting this sentence.
~~AMC 25.854 provides guidance on how to determine cabin length.~~

response *Accepted.*

The text has been deleted.

comment *117* comment by: *Airbus Operations GmbH*

Airbus Comment No. 13 on:
- **AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes**
- **AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes**

Note: This comment is related to 2 sections and will be placed into the CRT database at both positions.

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1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 51/81, Appendix AMC S25.10(a)+(b)
Page 61/81, Appendix AMC S25.20(b)(1)+(4)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes
AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes
The indication provided to the flight crew, as required by S25.10(b)(8), should be triggered without delay if the door is not in the safe position (i.e. open and secured) during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.

AMC S25.20(b) Access to Type III and IV Emergency Exits
(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off, approach and landing phases.
(…)
(4) The alerting system (…). It should be considered that the cabin occupant needs to move within the cabin to reach the deployable item, therefore, the alerting system should be triggered at the latest during descent, allowing enough time prior to entering the approach phase. The aural and visual alerts should both remain on until the obstacle is properly stowed.

Airbus Comment:

The comment is on the new requirement to trigger the door position indicating system "*early enough to enable the crew to take appropriate action before entering the approach phase*", or before entering "approach" for the Type III and IV Emergency Exits obstructing items

While the motivation for such requirement may be understandable, there is a potential adverse safety aspect that needs to be clarified by the EASA, or need to remove these portions of the AMCs:
- On the one hand, care must be taken to not develop additional flight crew procedure to address such "early enough" criteria, such procedure being most probably in contradiction with the "Sterile Cockpit Rule" requiring pilots to refrain from non-essential activities during critical phases of flight, normally below 10,000 feet.
- On the other hand, triggering such system automatically (or manually above 10,000 feet) is a lot too early leading to often triggering the alarm, and thus creating human factor risks of flight crew ignoring the too frequent alarm.

For reasons that an alarm should not be used as a reminder to the crew to execute its duty of preparing the cabin for landing, and for reasons that such requirement would generate a higher adverse effect on safety than a true benefit (in diverting the pilots' attention during critical phases of flight to manage the cabin configuration, in getting them used to the alarm and qualify them as intempestive), these portion of the text should be removed:
- AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes +

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AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes: remove
~~*When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase.*~~

- AMC S25.20(b) Access to Type III and IV Emergency Exits: remove

A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off~~, approach~~ and landing phases.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
AMC incitation to integrate in the designs some solutions creating more adverse effect on safety than benefit.

response *Not accepted.*

See the response to comment 72.

comment *207* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
AMC 25.854 provides guidance on how to determine cabin length

Comment:
This sentence is irrelevant here, as the length of the fuselage is not a discriminant.

Requested change and proposed text
Remove this sentence

response *Accepted.*

The text has been deleted.

comment *208* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off, approach and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning

properly

Comment:
Same comment as for the same paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly

response

Not accepted.

See the response to comment 72.

comment *209* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(b)(8) is an acceptable means to provide this assurance

Comment:
Same comment as for the same paragraph in AMC S25.10(a).

Requested change and proposed text
Remove the paragraph cited in the extract.

response

Accepted.

See also the response to comment 71.

comment *238* comment by: *Bombardier*

Reference NPA AMC S25.10(b):
An assessment should be made of the cabin features adjacent to the door in order to ensure that there is sufficient clearance on each side of the door during all phases of flight such that the frangibility features of the door, as required by S25.10(b)(5), will work as intended. The frangibility should be demonstrated by test using a 5th percentile female, and the resulting

aperture should be demonstrated to be large enough for a 95th percentile male to escape.

Comment:
Bombardier believes that previously approved frangible door designs that do not consider the possibility that a door may become jammed in the partially open position do not provide an adequate level of safety and encourages EASA to adopt more stringent requirements for interior doors on commercially operated aircraft.

The following is the suggested revised text:
… The frangibility should be demonstrated by tests using a 5th percentile female, and the resulting aperture should be demonstrated to be large enough for a 95th percentile male to escape; tests should demonstrate effectiveness of the frangible feature(s) when the door is in both the closed and partially opened positions.

The means used to jam the door for each demonstration must replicate conditions that can cause the door to jam and must not increase rigidity of the door or otherwise increase the effectiveness of the frangible feature relative to that which can be expected to occur.

response

Partially accepted.

EASA believes that indeed any probable jamming of the door in a non-fully closed position should also be considered. This has been added in the final draft AMC text.

comment

239 comment by: *Bombardier*

Reference NPA AMC S25.10(b):
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing …

The indication provided to the flight crew, as required by S25.10(b)(8), should be triggered without delay if the door is not in the safe position (i.e. open and secured) during any of the taxiing, take-off, approach and landing flight phases. When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the approach phase. Appropriate procedures for crew action in the event that the door is signalled as being not secured in the safe position, should be established.

Comments:
See similar Bombardier comments on AMC S25.10(a)

response

See the responses to comments 71 and 72.

comment

240 comment by: *Bombardier*

Reference NPA AMC S25.10(b):
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off, approach and landing should be part of the automatic opening system

required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly.

Comment:
While Bombardier opposes the automatic opening of cabin doors for taxi, takeoff or landing, it is our opinion that both means for securing a cabin door in the open position should secure the door automatically when the door is opened/stowed without any other passenger or crew action.

The following is the suggested text:
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off, approach and landing should not involve any passenger or crew action separate from opening the door when functioning properly.

response

Not accepted.

For commercially operated aeroplanes, neither the opening nor the latching of the door in the open position shall rely on any passenger action. This shall also not involve any flight crew member leaving their position in the cockpit. Please refer to the amended certification specification and related AMC.

comment *338* comment by: *GAMA*

Page 51, AMC S25.10(b)
Extract:
"AMC 25.854 provides guidance on how to determine cabin length"

Comment:
This sentence is irrelevant here, as the length of the fuselage is not a discriminant.

Requested change and proposed text

Remove this sentence

Extract:
"Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off, approach and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly"

Comment:
Same comment as for the same paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text

Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly

Extract:

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	"If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(b)(8) is an acceptable means to provide this assurance" Comment: Same comment as for the same paragraph in AMC S25.10(a). Requested change and proposed text Remove the paragraph cited in the extract.
response	*See the responses to comments 71, 72, 74.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.10(c) Isolated Compartments p. 51-54

comment	*62* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland* AMC to Appendix S, S25.10(c) § (a)(2)(ii)(D) page 53 The NPA proposed text allows to consider a compartment as being occupied for the majority of the flight time if it contains a given number of passenger seats approved for TTOL are installed in the compartment. The intention of the proposed text is understood. However, having such a small number of seats installed in a compartment is not considered as equivalent to having a smoke detector installed. VIP aircraft are likely not to be always loaded at their maximum seated capacities. In such case, some small compartments with the low number of seats proposed in the NPA text might be left unoccupied for the whole flight duration. It is considered that installation of a smoke detector is not an undue burden related to its effect on the detectability of a fire and therefore it is proposed to delete § (a)(2)(ii)(D) or increase the number of PAX seats required in the compartment or define some appropriate limitations are defined in the AFMS (e.g. door opened when not occupied, cabin crew survey,…).
response	*Not accepted* *See the response to comment 35.*

comment	*76* comment by: *Andrew Hanley (Jet Aviation)* AMC to Appendix S, S25.10(c) Isolated Compartments, paragraph (a)(2)(A) Comment:

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This paragraph does not adequately consider rooms which contain both berthable divans and the number of seats per the table to make it not isolated despite containing berthable divans. Take for example, a large lounge area on a wide body aeroplane, containing several berthable divans but with the required number of seats to make it not isolated; simply having one berthable divan in a compartment should not always force it to be isolated.

Suggest to rework to exclude thjose compartments which contain the required number of seats per the table.

Suggested text change:
(A) bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans, **and contain less seats that can be occupied for taxing, take-off and landing than the number defined in the table of S25.10(c)(2)(ii)(D)**; however, passenger seats need not be considered as sleeping installations in this context);

response

Not accepted.

It is agreed that there might be specific designs where the installation of, for instance, a single berthable divan would not necessarily justify the installation of a smoke detection system. However, every cabin executive interior installation is very specific and it is very difficult to address all cases in an AMC. The AMC represents only one acceptable means of compliance and the criteria could still be discussed on a case-by-case basis after familiarisation with a specific design.

comment

77 comment by: *Andrew Hanley (Jet Aviation)*

This comment applies to page 52, AMC S25.10(c)(a)(2)

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Some members of the SLRG requested to include the requirement to install smoke detection inside stowage cabinets larger than 25cu ft however this was rejected by EASA to be included into the NPA.

The practice of installing smoke detection in stowage cabinets (located in the main cabin) larger than 25 cu ft is common practice among several completion centres, despite having no written formal requirement. For mayn years this “requirement” has been more of a mutual agreement between EASA and some completion centres and this situation presents an uneven level of certification across industry; it is noted that one of the objectives of the RMT was to reduce uneven interpretation.

Of course other AMC could be applied in lieu of a smoke detector, such as a grille or vent to ensure smoke can flow outside of the cabinet and be detected by a room detector (detector if the room is isolated).

Currently there is no specification (in CS 25 or CRI) that requires smoke detection inside stowage compartments and it is JBSC proposal to address this situation.

Under the section of AMC S25.10(c)(a)(2) JBSC propose to introduce a new sub para (iii) to address stowage compartments larger than 25 cu ft. The text proposal below reflects current design criteria and this should be formalised in CS 25; it creates a standardised approach across industry.

JBSC would like to understand if the 25 cu ft “agreement” is standardised across industry or if it is used only by a few organisations? (by the way, this is precisely the sort of question the RMT aimed to remove)

Note, by introducing it in CS 25 Appendix S, airliners remain unaffected by this rule change.

Suggested text:
New AMC S25.10(c)(a)(2)(iii)
Stowage compartments located inside an isolated compartment (isolated as defined in S25.10(a)(1)&(2)) and of a volume greater than 0.7 cubic meter (25 cubic feet) should be equipped with a smoke detector, unless it can be demonstrated that smoke from within the stowage compartment will be detected by the detector of the isolated compartment in which the stowage compartment is located (e.g through grilles in the stowage door) and within the time specified in CS S25.10(c).

response

Partially agreed.

The intent is agreed for 25 cu ft. compartments located inside an isolated compartment only. This has been introduced in paragraph (b) of AMC to Appendix S, S25.10(c), not in paragraph (a)(2)(iii).

comment *78* comment by: *Andrew Hanley (Jet Aviation)*

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This comment applies to AMC to S25.10(c)(a)(2)(ii)(D) Table

Comment:

The table is not clearly defined and open to misinterpretation. It should be clarified that the column on the left is passenger seats only. Confusion may arise because the right hand column is defined as passenger, crew and seats in excess; it is not obvious that the left hand column is different.

Suggested text change of the left hand column header:
Total Number of **passenger** seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing

response

Accepted.

The table heading has been revised for better clarification.

comment *80* comment by: *Andrew Hanley (Jet Aviation)*

This comment applies to AMC to S 25.10(c) sub para (b) Smoke/fire detection.

Extract:

If the isolated compartment (...) automatic after a time period of no longer than **10 minutes** following the last deactivation action.

Comment:

10 minutes is not a practicable time limit for such a feature.

It is JBSC experience in designing such systems, that a deactivation time of no longer than 10 minutes is not sufficient when considering the following process of events:

· Press detector deactivation,
· If deactivation is only allowed to be done by cabin crew, cabin crew deactivate and inform passengers it is ok to smoke,
· Passengers prepare and ignite the cigarette,
· time to smoke the cigarette,
· a pre-warning to passengers is required to inform the detector will shortly be reactivated. This may need to happen 1 or 2 minutes before reactivation. Effectively this shortens the actually cigarette smoking time down to perhaps 7 or 8 minutes.
· Sufficient time is required for the smoke to dissipate in order to avoid triggering the detector once reactivated; this depends on the efficacy of the air conditioning system.
· Detector automatically reactivates.

JBSC propose to extend the deactivation time to no longer than 15 minutes. This is similar to MMEL procedures for faulty lavatory smoke detectors on airliners which require a physical check of the lavatory by a crew member. Reference example from A340 can be

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	sent to EASA upon request. Suggested text change: … no longer than **15 minutes** following the last deactivation action.
response	*Not accepted.* *The 10 minutes was not defined in relation to the time it takes for smoking a cigarette or a cigar. The time delay for re-activation is only needed to provide a reasonable period for smoke to dissipate after smokers leave the room, thus avoiding nuisance warnings. In this regard, 10 minutes is in fact considered to be a generous allowance.*

comment	*98* comment by: *LHT DO* Add to (a)(2)(i): (F) a stowage compartment of more than 25 ft3 which is inside an isolated compartment. This size limit has been already been accepted in past projects.
response	*Partially accepted.* *See the response to comment 77.*

comment	*100* comment by: *LHT DO* EASA is kindly requested to clarify the definition of "many isolated compartment" and "remote from each other".
response	*Partially accepted.* *It is acknowledged that the word 'many' has no added value in this context and shall be removed. As soon as there are two isolated compartments which are remote from each other, the need for the indication means should be considered.* *'Remote' means in this context that for instance the isolated compartments are not adjacent, nor separated by the aisle and facing each other. It is believed that this clarification does not need to be included in the AMC.*

comment	*103* comment by: *LHT DO* The seat number criteria defined in (a)(2)(ii)(D) should be used to determine whether a bedroom is to be considered as an isolated compartment, instead of stating that any bedroom is an isolated compartment.
response	*Not accepted.* *See the response to comment 76.*

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comment	*104* comment by: *LHT DO* Table: for clarification "total number of seats" includes all cabin attendents seat and all seats approved for occupancy during taxiing, take-off and landing
response	*See the response to comment 78.*

comment	*118* comment by: *Airbus Operations GmbH* **Airbus Comment No. 14 on:** **- AMC S25.10(c) on Isolated Compartments** **1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:** Page 53/81, paragraph (a)(2)(ii) **2. PROPOSED TEXT / COMMENT:** The proposed text indicates: *(ii) On the other hand, a compartment, unless meeting one of the criteria above, will be accepted as being occupied for the majority of the flight time, thus providing for smoke/fire detection by the occupants, if any of the following conditions are met:* *(…)* *(C) there is no seat and no stowage in the compartment (e.g. a connecting corridor); and* *(…)* **Airbus Comment:** As written, it appears that EASA considers that areas like "connecting corridor" are likely to be occupied for the majority of the flight time, which is obviously a wrong statement. Suggest adding a sentence for such area in the introduction, typically as proposed below (*new text underlined*): "*On the other hand, a compartment, unless meeting one of the criteria above, will be accepted as being occupied for the majority of the flight time, or creating no issue with respect of undetected fire generation, thus providing for smoke/fire detection by the occupants, if any of the following conditions are met:*" **3. RATIONALE / REASON / JUSTIFICATION for the Comment:** Clarification.
response	*Partially accepted.* *It is acknowledged that connecting corridors are not necessarily considered as being occupied during the majority of the flight time and that the reason for not considering those compartments as isolated is the low probability that a fire may start in those compartments. Therefore, the condition (C) has been moved to a dedicated additional paragraph (iii).*

comment	*119* comment by: *Airbus Operations GmbH*

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Airbus Comment No. 15 on:
- AMC S25.10(c) on Isolated Compartments

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 53/81, paragraph (a)(2)(ii)(D)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(ii) On the other hand, a compartment, unless meeting one of the criteria above, will be accepted as being occupied for the majority of the flight time, thus providing for smoke/fire detection by the occupants, if any of the following conditions are met:
(…)
(D) the number of seats in the compartment (including cabin attendant seats and seats in excess) approved for occupancy during taxiing, take-off and landing is at least equal to the number indicated in the table below.

Total Number of seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing	*A compartment is accepted as being occupied for the majority of the flight time if at least the following number of taxiing, take-off and landing seats are installed in the compartment*
(…)	*(…)*

ð Airbus Comment:
For clarification purposes, the header of the table's left column should clarify that the numbers correspond to "passenger" seat (whereas on the right column this is "passenger + crew seats"

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Clarification.

response *Accepted.*

comment *120* comment by: *Airbus Operations GmbH*

Airbus Comment No. 16 on:
- AMC S25.10(c) on Isolated Compartments

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 53/81, paragraph (a)(3)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(3) Minimum requirements for compartments
For all compartments, irrespective of whether or not they are required to have a smoke/fire detection system installed:

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Airbus Comment:

Why would such requirement only be applicable to low occupancy or non-commercially used aeroplanes? As it is written in appendix S, such guidance seems not to be applicable to commercially used aeroplanes.

Airbus suggests moving this guidance material to AMC of other CS-25 requirement for wider applicability.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Also applicable to commercial aeroplanes.

response

Not accepted.

The intent was to address isolated compartments that are installed in aeroplanes for which Appendix S is applicable, consistent with the Terms of Reference of RMT.0264. Extension to all large transport aeroplanes might be considered in the future, but stakeholders who were not represented in the rulemaking group would also need to be involved.

comment *121* comment by: *Airbus Operations GmbH*

Airbus Comment No. 17 on:
- AMC S25.10(c) Isolated Compartments

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 53/81, Appendix AMC S25.10(c)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(ii) On the other hand, a compartment, unless meeting one of the criteria above, will be accepted as being occupied for the majority of the flight time, thus providing for smoke/fire detection by the occupants, if any of the following conditions are met:(...)
(C) there is no seat and no stowage in the compartment (e.g. a connecting corridor); and

Airbus Comment:

As written, the text indicates that typical connecting corridor with no seat and no stowage are assumed to be occupied for the majority of the flight time, thus providing for smoke/fire detection by the occupants…

The reason to exclude such typical connecting corridor with no seat and no stowage from being equipped with smoke/fire detection system is more the relative improbability that a fire may start in such “compartment”.

Airbus suggests rewording.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Language improvement for clarification.

response

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It is acknowledged that connecting corridors are not necessarily considered as being occupied during the majority of the flight time and that the reason for not considering those compartments as isolated is the low probability that a fire may start in those compartments. Therefore, the condition (C) has been moved to a dedicated additional paragraph (iii).

comment *122* comment by: *Airbus Operations GmbH*

Airbus Comment No. 18 on:
- AMC S25.10(c) on Isolated Compartments

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 54/81, paragraph (a)(3)(i)(A)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(a)(3)(i) For accessibility and firefighting purposes, sufficient lighting in the compartment should be provided. For compartments that could be dark during flight, means should be provided to enable a person entering the compartment to readily gain visibility of the interior, by means such as:
(A) a conveniently located, easy to see and use lighting control; (…)

Airbus Comment:

As such, the test suggest that there must be design features that will enable to "see" the lighting control even in dark condition, which will most likely attract illuminated lighting control.
In current architecture of ground buildings, houses… there is no such requirement and backlighting lighting switches may be excessive requirement in case the lighting switch is sol located as it is easy to "find", even in dark condition (typically a switch close to the door frame at standard height will be likely to be easily found, even without seeing it in the dark).

Airbus suggests replacing "easy to see" by "easy to find".

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Avoid excessive design requirement.

response *Accepted*

comment *210* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMCS25.10(c)(a)(2)(i)A

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bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans even if they also contain seats that can be occupied during taxiing, take-off and landing; however, passenger seats need not be considered as sleeping installations in this context);

Comment:
This paragraph is a bit excessive. As an extreme case, an airplane with only one compartment containing all the airplane seats plus a convertible divan would need to be treated as an isolated compartment. There should be a minimum number of TTOL seats above which the compartment need not be considered as isolated. Considering that sleeping passengers are not likely to detect a fire, it is logical to consider them as "no passenger" regarding fire detection. Therefore, the numbers of seats defined in the table in § (D) should be used.

Requested change and proposed text

bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans) and contain less seats that can be occupied during taxiing, take-off and landing than the number defined in the table of § (a)(2)(ii)(D)(however, passenger seats need not be considered as sleeping installations in this context);

response

Not accepted.

See the response to comment 76.

comment *211* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC S25.10(c)(a)(2)(ii)C:
there is no seat and no stowage in the compartment (e.g. a connecting corridor)

Comment:
This qualifies a compartment as being occupied most of the time, which is very strange. Eventhough the purpose of it maybe understood toay, maintaining this paragraph here is very likely to generate confusions and discussions during futur certification projects involving persons who did not participate in the NPA elaboration nor in its review.

Requested change and proposed text
Move this consideration to § (b) of the same AMC, indicating that this condition relieves from installing a smoke detection in the compartment.

response

Partially accepted

See the response to comment 118.

comment *212* comment by: *Dassault-Aviation*

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Dassault Aviation comment

Extract AMCS25.10(c)(a)(2)(ii)(D):
Header of the table: Total Number of seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing

Comment:
Clarity: precise that it is the number of passenger seats, eventhough it is implicit considering "approved for occupancy during taxiing, take-off and landing"

Requested change and proposed text
Total Number of passenger seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing

response *Accepted.*

comment *213* comment by: *Dassault-Aviation*

Dassault Aviation comment

Comment AMC25.10(c)(a)(3):
In the NPA EIR, this paragraph of the AMC was in an AMC to CS25 and applicable to any type of compartment. It has been moved into this AMC titled "Isolated compartment" and located in appendix S, consequently it becomes applicable only to isolated compartments in appendix S airplanes. If the intent of the EASA is to keep this paragraph applicable to any compartment, then it must removed from this AMC and put in another one.

response *Not accepted.*

See the response to comment 120.

comment *214* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMCs25.10(c)(b):
For complex interiors with many isolated compartments remote from each other ...

Comment:
The word "many" should better be removed, as it is extremely unprecise and brings nothing to the requirement. As soon as 2 isolated compartments are remote from each other, the need for the indication means should be considered.

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Requested change and proposed text
For complex interiors with isolated compartments remote from each other

response *Accepted.*

comment *233* comment by: *LHT DO*

Definition of compartments occupied for the majority of the flight time:

LHT kindly asks EASA to explain the rationale for classifying a galley compartment as an isolated compartment by definition in any case. If an aircraft has a separated galley compartment, the galley would be one of those areas where the cabin attendent would gather together when not performing any other duties or services in the cabin. Therefore, there is good reason to assume that this area is to be occupied for the majority of the flight.

Furthermore, EASA is kindly requested to explain why the provisions of (2)(ii)(B) are not sufficient to de-classify such a galley compartment to a compartment which is accepted as being occupied for the majority of the flight time.

LHT proposes to allow re-classification of a galley compartment to a non-isolated compartment if one of the provisions of (2)(ii) is applicable.

response *Not accepted.*

It is agreed that there might be specific designs for which it can be justified that galleys are occupied by flight attendants (provided that flight attendants are required to be on-board the considered aeroplane) for the majority of the flight time. Every cabin executive interior installation is very specific, and in most cases, it is very difficult to address all cases in an AMC. EASA elected to be quite conservative in the approach to isolated compartments, however, being defined in an AMC, the criteria could be discussed on a case-by-case basis after familiarisation with a specific design.

comment *241* comment by: *Bombardier*

Reference NPA AMC S25.10(c):
(a) Cabin Compartments
(1) Compartments to be considered as isolated …

Comment:
It is considered noteworthy that there is no guidance as to what is and what is not a compartment; for example, occupied areas of the airplane can be separated from one another by any number of means:
- Interior doors
- Curtains
- Partitions only or other compartments (eg galley or lavatory located in the center of a wide body airplane with corridors that connect the areas forward and aft of the compartments)

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Guidance would be relevant to other requirements as well, including CS 25.851(a)(1) which accounts for the possibility of multiple passenger compartments even though CS25.813(e) prohibits the installation of interior doors.

response *Noted.*

EASA acknowledges that there might be some benefit to define in CS-25 what a passenger compartment is, although this need was never identified by the stakeholder-led rulemaking group. However, regarding the specific use of the term in the requirement S25.10(c), it is believed that the AMC to S25.10(c) provides sufficient guidance to assess whether an area of the cabin is to be considered as an isolated compartment or not.

comment *242* comment by: *Bombardier*

Reference NPA AMC S25.10(c):
S25.10(c) requires that a compartment in which a fire would not be directly or quickly detected by occupants of another compartment.

Comment:
As with the Bombardier comment on S25.10(c), the disagreement between the AMC and S25.10(c) needs to be corrected.

response *Not accepted.*

See the response to comment 156.

comment *243* comment by: *Bombardier*

Reference NPA AMC S25.10(c):
Detection of fire/smoke by occupants of another compartment only will provide the required assurance if there is confidence that this other compartment in question will be occupied, and not by sleeping persons. Thus, if smoke/fumes transmission is relied upon for compliance, the occupancy conditions of the aeroplane as a whole need to be taken into account.

Comment:
It is suggested that the guidance make specific reference to the paragraphs of the AMC that identify which compartments will be accepted as being occupied for the majority of the flight time.

The following is the suggested text:
Detection of fire/smoke by occupants of another compartment only will provide the required assurance if there is confidence that this other compartment in question will be occupied, and not by sleeping persons (i.e. compartments that meet (a)(2)(iii)(A), (a)(2)(iii)(B) or (a)(2)(iii)(D) below). Thus, if smoke/fumes transmission is relied upon for compliance, the occupancy conditions of the aeroplane as a whole need to be taken into account.

response *Accepted.*

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comment	*244* comment by: *Bombardier* **Reference NPA AMC S25.10(c):** (A) bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans even if they also contain seats that can be occupied during taxiing, take-off and landing; however, passenger seats need not be considered as sleeping installations in this context); **Comment:** The installation of one or more berthable divan should not be the sole criteria used to determine that a compartment is a bedroom – there are likely many cases where divans with berthing capability are installed in compartments that have a significant number of seats that are occupied for the majority of the flight time. It is recommended the table in paragraph (a)(2)(iii)(D) be modified to include the minimum number of passenger seats that differentiate a compartment that is occupied for the majority of the flight time from a bedroom. For example, in the case of an airplane with approved passenger capacity of 19 or less, a compartment with a berthable divan and 4 passenger seats (where 4 is considered to be a reasonable number) is accepted as being occupied for the majority of flight time. The following is the suggested revised text: *(A) bedrooms, (i.e. except as specified in in paragraph (a)(2)(iii)(D) below, rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans even if they also contain seats that can be occupied during taxiing, take-off and landing; however, passenger seats need not be considered as sleeping installations in this context);* Furthermore, it is suggested to add a column to the table in paragraph (a)(2)(iii)(D) labeled as follows: *A compartment with one or more berthable divans is accepted as being occupied for the majority of the flight time if at least the following number of taxiing, take-off and landing seats are also installed in the compartment*
response	*Not accepted.* *See the response to comment 76.*

comment	*245* comment by: *Bombardier* **Reference NPA AMC S25.10(c):** For complex interiors with many isolated compartments remote from each other … **Comment:** The word “remote” has been understood in some cases to mean “separated” as opposed to “located a significant distance from one another”; it is requested that the meaning of the word “remote” in this context be confirmed.
response	*Not accepted.* *See the response to comment 100.*

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comment *289* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.10(b)
Extract:
AMC 25.854 provides guidance on how to determine cabin length

Comment:
This sentence is irrelevant here, as the length of the fuselage is not a discreminent.

Requested change and proposed text
Remove this sentence

response *Accepted.*

comment *290* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.10(b)
Extract:
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off, approach and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly

Comment:
Same comment as for the same paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
Both means required by S25.10(b)(6)(iii) for securing the door in the open position for taxiing, take-off and landing should be part of the automatic opening system required by S25.10(b)(6)(ii) and not involve any passenger or crew action when functioning properly

response *Not accepted.*

See the response to comment 72.

comment *291* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

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AMC 25.10(b)
Extract:
If the aeroplane is also equipped with one or more internal doors that are compliant with CS 25.813(e), i.e. that do not cross any egress path, the possibility that escaping passengers may believe that such doorway leads to an egress path should also be taken into consideration. In order to reduce the risk of confusion, it should be assured that such doors remain closed during taxiing, take-off and landing. Inclusion of the position of these doors in the indication means required by S25.10(b)(8) is an acceptable means to provide this assurance

Comment:
Same comment as for the same paragraph in AMC S25.10(a).

Requested change and proposed text
Remove the paragraph cited in the extract.

response *Accepted.*

See the response to comment 71.

comment *339* comment by: *GAMA*

Page 51, AMC S25.10(c)
It is considered noteworthy that there is no guidance as to what is and what is not a compartment; for example, occupied areas of the airplane can be separated from one another by any number of means that include interior doors, curtains, partitions only or other compartments (e.g. galley or lavatory located in the center of a wide body airplane with corridors that connect the areas forward and aft of the compartments).

Guidance would be relevant to other requirements as well, including CS 25.851(a)(1) which accounts for the possibility of multiple passenger compartments even though CS25.813(e) prohibits the installation of interior doors.

response *Noted.*

See the response to comment 241.

comment *340* comment by: *GAMA*

Page 52, AMC S25.10(c)(a)(2)(i)(A)
The word “remote” has been understood in some cases to mean “separated” as opposed to “located a significant distance from one another”; it is requested that the meaning of the word “remote” in this context be confirmed.

“bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans even if they also contain seats that can be occupied during taxiing, take-off and landing; however, passenger seats need not be

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considered as sleeping installations in this context);"

This paragraph is a bit excessive. As an extreme case, an airplane with only one compartment containing all the airplane seats plus a convertible divan would need to be treated as an isolated compartment. There should be a minimum number of TTOL seats above which the compartment need not be considered as isolated. Considering that sleeping passengers are not likely to detect a fire, it is logical to consider them as "no passenger" regarding fire detection. Therefore, the numbers of seats defined in the table in § (D) should be used.

Requested change and proposed text

bedrooms, (i.e. rooms containing any sleeping installations intended to provide a high level of sleeping comfort, such as beds, or berthable divans) and contain less seats that can be occupied during taxiing, take-off and landing than the number defined in the table of § (a)(2)(ii)(D)(however, passenger seats need not be considered as sleeping installations in this context);

response *See the responses to comments 100 and 76.*

comment *341* comment by: *GAMA*

Page 53, AMC S25.10(c)(a)(2)(ii)(C)
"there is no seat and no stowage in the compartment (e.g. a connecting corridor)"

This section appears out of place and will likely cause considerable confusion.

Requested change and proposed text

Move this consideration to § (b) of the same AMC, indicating that this condition relieves from installing a smoke detection in the compartment.

Page 53, AMC S25.10(c)(a)(2)(ii)(D)
Header of the table: "Total Number of seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing"
GAMA request the following language be incorporated into the Header of the Table for clarity;
"Total Number of passenger seats installed on the aeroplane approved for occupancy during taxiing, take-off and landing"

Page 53, AMC S25.10(c)(a)(3)
In the NPA EIR proposal, this paragraph of the AMC was in an AMC to CS25 and applicable to any type of compartment. It has been moved into this AMC titled "Isolated compartment" and located in appendix S, consequently it becomes applicable only to isolated compartments in appendix S airplanes. If the intent of the EASA is to keep this paragraph applicable to any compartment, then it must be removed from this AMC and put in another one.

response *See the responses to comments 118, 78, 120.*

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comment	*342* comment by: *GAMA* **Page 54, AMC S25.10(b)** "For complex interiors with many isolated compartments remote from each other ..." The word "many" should be deleted as it is not definitive. As soon as 2 isolated compartments are remote from each other, the need for the indication means should be considered. Requested change and proposed text For complex interiors with isolated compartments remote from each other
response	*Accepted.* *See the response to comment 100.*

comment	*350* comment by: *LHT DO* (a)(2)(ii)(A): LHT agrees that the number of installed cabin crew seats in a compartment should be taken into consideration for classification as isolated or non-isolated. Nevertheless, requiring all required cabin crew seats being located in the compartment seems not adequate considering especially on large aircraft, it is quite unlikely to have such an cabin configuration. Therefore, LHT proposes to define a requirement, that takes into account the no. of required cabin crew seats on the aircraft as well as the distribution of the installed cabin crew seats in the various compartments.
response	*Not accepted.* *It is agreed that there might be specific designs for which it can be justified that the compartment is to be considered occupied for the majority of the flight time even if not all required crew seats are located in the compartment. Every cabin executive interior installation is very specific, and in most cases, it is very difficult to address all cases in an AMC; EASA elected to be quite conservative in the approach to isolated compartments, however, being defined in an AMC, the criteria could be discussed on a case by case basis after familiarisation with a specific design.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.10(d) and (e) Deactivation of existing Emergency Exits p. 55-59

comment	*6* comment by: *Airbus Operations GmbH* **Airbus Comment No. 2 on:** **- S25.10(d)(3) on deactivated exits** **- S25.10(e)(1) on distance between exits** **- AMC S25.10(d) and (e)**

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Note: This comment is related to 3 sections and will be placed into the CRT database at all positions**.**

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 28/81, S25.10(d)(3) and S25.10(e)(1)
Page 59-60/81, AMC S25.10(d) and (e)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

S25.10 on General Cabin Arrangement
(d) Deactivation of existing Emergency Exits: Deactivation of one of more emergency exits, that results in non-compliance with CS 25.807(e)(1), is acceptable provided compliance with the following requirements is shown (See AMC to Appendix S, S25.10(d) and (e)):
(…)
(3) the requirements of CS 25.807(e)(2) are still complied with, considering only the remaining non-deactivated emergency exits.

(e) Distance between Emergency Exits: deactivation of emergency exits which results in non-compliance with CS 25.807(f)(4) is acceptable on non-commercially operated aeroplanes only, provided that:
(1) compliance with S25.10(d) is shown; and (…)

Airbus Comment:

As written, this text proposal differs from the initial SLRG proposal agreeing to set-up such design criteria to address both commercially and non-commercially operated aeroplanes when deactivating existing emergency exits.

The current EASA proposal has "only" retained the new constraining maximum seat to exit distance for any aeroplanes (new CS 25.807(e)(2)), but has limited the deactivation to the non-commercially operated aeroplanes only.

As a result, the maximum seat-to-exit distance is now limited to the maximum 30ft/45ft criteria on non-commercially operated aeroplanes with deactivated exits, whereas some cabin layouts have been recently approved on non-commercially operated aeroplanes with deactivated exits with seat-to-exit distances exceeding the new 30ft/45ft criteria.

Either the 30ft/45ft criteria is considered "universally" adequate for seat-to-exit maximum distance, and therefore this should be predominant to the kind of operations (commercial or non-commercial), or the Agency should further develop where the 30ft/45ft criteria is coming from and why recently approved projects with larger distances would now be considered unsafe.

In other words, the 30ft/45ft criteria was only agreed by the SLRG as a consensual design criteria to enable deactivating exits on both commercially and non-commercially operated aeroplanes.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:

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The 30ft/45ft criteria was proposed to find a consensual design criteria to enable deactivating exits on both commercially and non-commercially operated aeroplanes.

The EASA has retained the industry proposal for more stringent standard (proposed to gain the possibility to deactivate exits on commercially operated aeroplanes of more than 19PAX), but has then refused to authorize the deactivation of exits on the commercially operated aeroplanes (See dissenting position on deactivation of exits).

See also our comment on CS 25.807 and AMC 25.807.

response

Not accepted.

See the response to comment 8.

comment

44 comment by: *FAA*

Pages 55-61, Book 2 AMC – Subpart D AMC to Appendix S, S25.10(d) and (e)

The proposed AMC is too complex to easily understand. It should be re-written to separate deactivation of exits and distance between exits.

Re-write this AMC to make it clear and understandable and separate the two major topics of deactivation of exits and distance between exits.

response

Not accepted.

Both issues (exits deactivation and distance between exits) are linked and cannot be separated. It is acknowledged that the AMC text is complex, because the matter itself is quite complex, and this is why figures have been added to clarify. Some typographical errors were spotted in the text, and have now been corrected, which might bring clarity to the text.

comment

107 comment by: *LHT DO*

EASA is kindly requested to provide guidance on the method to analytically determine the effect of the obstruction on the number of passengers that can be evacuated.

response

Accepted.

See the response to comment 84. An AMC to Appendix S, S25.20(b)(2) has been created.

comment

123 comment by: *Airbus Operations GmbH*

Airbus Comment No. 18bis on:
- AMC S25.10(d) and (e) on deactivation of existing Emergency Exits

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Pages 55-60/81, various paragraphs

2. PROPOSED TEXT / COMMENTS:
(deleted Text ~~strikethrough~~, new/revised text underlined)

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· **Bottom of page 55, change references as follows:**
"Seats located within these latter zones do meet the criteria of ~~CS 25.807(e)(2)(i)~~ AMC 25.807 § 2.1(i) but do not meet the criteria of ~~CS 25.807(e)(2)(ii)~~ AMC 25.807 § 2.1(ii)."
Reason: consistency with our comments on CS 25.807(e) and AMC 25.807, and on S25.10(d)

· **Page 56, 3rd paragraph of example 1, change reference as follows:**
"No stay-out zone needs to be identified in the cabin, if any possible passenger seat location will be no more than 9.14 m (30 ft) from the nearest exit on one side of the fuselage, and no more than 13.72 m (45 ft) from the nearest exit on the other side of the fuselage, i.e. in compliance with ~~S25.10(d)(3)~~ AMC 25.807 § 2.1."
Reason: consistency with our comments on CS 25.807(e) and AMC 25.807, and on S25.10(d)

· **Page 56, 11th and 12th paragraphs of example 1, change references as follows:**
"Secondly, a zonal analysis is conducted on the left side of the fuselage in accordance with ~~X~~S25.10(d). There is only one zone represented by the remaining functional exits on this side. The allowable number of passenger seats between the forward and aft Type C exits is again limited to one half of the sum of the exit ratings that bound the zone: 1/2(55 + 55) = 55.
The passenger seating locations for taxi, take-off and landing should simultaneously satisfy all basic limitations set by ~~X~~S25.1(a) and both of the zonal analyses in accordance with ~~X~~S25.10(d)."
Reason: editorial

· **Page 57, 3rd paragraph of example 2, change reference as follows:**
"A stay-out zone is identified in the middle of the cabin, where a passenger seat that can be occupied during taxiing, take-off and landing would not be in compliance with ~~S25.10(d)(3)~~ AMC 25.807 § 2.1, i.e. would be further than 9.14 m (30 ft) from the nearest exit, on both sides of the fuselage. The exact limitation on the seat installation location in order to respect the stay-out zone should be calculated using the longitudinal measurement method as explained in AMC 25.807."
Reason: consistency with our comments on CS 25.807(e) and AMC 25.807, and on S25.10(d)

response *Accepted.*

comment *246* comment by: *Bombardier*

Reference NPA AMC S25.10(d) and (e):
In the case of commercial operations, in accordance with S25.1(a), the passenger capacity will have an upper possible limit of 48 passengers (1/3 of 145 (55 + 35 + 55) rounded down), i.e. one half of the maximum approved passenger seating capacity …

Comment:
Typographical error; the word "half" should be "third".

response *Accepted.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.20(a)(1) Flammability of Bed Mattresses p. 60-61

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comment *45* comment by: *FAA*

Page 61, Book 2 AMC – Subpart D AMC to Appendix S, S25.20(b)

In the discussion of this monitoring system a discussion of the criticality of this system and where this should fall when considering electrical load shedding should be added. Also what about MMEL dispatch relief?

Define the criticality of these systems and to which electrical bus they should be connected. Also, what about MMEL dispatch relief?

response *Partially accepted.*

The required reliability of the monitoring and alerting system shall enable to meet the safety objective for the following considered dreaded catastrophic event, in accordance with CS 25.1309: emergency exit not accessible during an emergency evacuation. It should normally not be necessary to detail in the AMC the implications of the above objective, since these are generically exposed in the AMC to CS 25.1309; however, one clarification is needed because the same probability of an emergency evacuation should be consistently applied.
The reliability requirement initially set out in the AMC was incommensurate with the failure severity. The same safety level was required from the monitoring/alerting system as that required by CS 25.783(b)(2) for the total loss of the emergency exit opening, which severity is much higher. This has now been corrected.
Current similar systems are certified with a safety analysis showing a probability of 10^{-5} for the loss of the alerting system together with the need to evacuate. Although this is not found appropriate either, there is no adverse in-service experience which justifies strengthening the requirement that drastically.
Based on the EASA occurrence reports database and the European Business Aviation Association (EBAA) exposure data related to business aviation, it has been established that the occurrence rate of an emergency evacuation following a (minor) crash (or the probability to actually need to evacuate urgently the occupants) on business aeroplanes (that are certified in the large aeroplane category) is of the order of magnitude 10^{-6}.
Based on the above, it is finally proposed to adopt the following compromise, which is totally in line with CS 25.1309 methodology and practice:

- *Failure Condition: Emergency exit not (fully) accessible following an emergency landing.*
- *Severity: CATASTROPHIC (conservative, since other exits exist and might be used).*
- *Safety Objective: 10^{-9}.*
- *Generic probability rate of an emergency landing (based on safety data): 10^{-6}*
- *Allocated failure rate for the condition 'emergency exit not accessible' (objective): 10^{-3}.*

To obtain the condition that the emergency exit is not accessible:

- *the occupants (crew and passenger) must ignore the normal procedure and briefing, and*
- *the monitoring/alerting system must have failed.*

It is indeed assumed that the passengers cannot ignore the irritating buzzer and are given sufficient time to react before landing.

By comparison with the same aural alert for safety belts in cars, it is assumed that:

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- *the passengers will not bear the irritating noise, and therefore take action to restore the Taxi, Take-off, and Landing (TTOL) configuration as desired,*
- *the possible occurrence(s) of triggering the irritating noise (because of not complying with the briefing instructions) will have an educational effect on the occupants, who will not forget to restore the TTOL configuration on the subsequent legs or flights.*

To support this argument of educational effect, it is worth mentioning that, according to a Harris Interactive survey prepared for the NBAA and GAMA ('The real world of Business Aviation', 2009), the mean number of passengers flown on business aeroplanes is 4 times higher than the mean individual count of passengers, implying that most passengers usually fly on multiple legs.

This educational effect should ensure that the occurrence rate of triggering the alerts in the cabin is much lower than 1.

Therefore, the monitoring/alerting system does not need to be more reliable than having a failure rate of 10^{-3} in order to meet, with margin, the safety objective for the considered failure condition.

This objective is consistent with a typical design of monitoring/alerting system (state of the art), considering that its failure is to be considered dormant, and with a typical aircraft maintenance programme (systems functional/operational tests performed during B check).

To conclude, EASA believes that MMEL implications should no longer be dealt with in CS-25 Book 2, because, since the introduction of Operational Suitability Data (OSD) in the regulatory framework, OSD is relevant to CS-MMEL.

comment *81* comment by: *Andrew Hanley (Jet Aviation)*

Definition of the "three-corner test" is missing.

Request addition text to clarify test procedure and pass/fail criteria.

response *See the response to comment 247.*

comment *101* comment by: *LHT DO*

EASA is kindly requested to provide guidance how to perform the three-corner test.

response *See the response to comment 247.*

comment *215* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
Additionally, the Bunsen burner is then to be applied at three separate corners of the

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production mattress with all its components. The three-corner test need not be conducted if the cushion passes the tests of CS-25, Appendix F, Part II.

Comment:
The three-corner test definition is missing

Requested change and proposed text
Clarify test procedure and pass/fail criteria for the three-corner test.

response *See the response to comment 247.*

comment *247* comment by: *Bombardier*

Reference NPA AMC S25.20(a)(1):
Additionally, the Bunsen burner is then to be applied at three separate corners of the production mattress with all its components. The three-corner test need not be conducted if the cushion passes the tests of CS-25, Appendix F, Part II.

Comment:
The expression "the production mattress" which implies that the only example of the mattress be subjected to a full scale test (see below). It is noted that mattresses will be custom made and that spring mattresses are preferred over foam mattresses.

While substituting the "the" for the word "a" addresses the above issue, there are the larger issues that must be addressed also:
- As discussed above, the tests of CS-25, Appendix F, Part II do not apply to mattresses on beds or berths that do not convert to a seat
- There is no definition for the "three-corner test" (ie sample size and construction, conditioning of samples, test procedure, pass/fail criteria, etc)

If a "three-corner test" is to be defined, an explanation as to why representative samples cannot be used in the test should be provided.

response *Not accepted.*

The text of the new AMC included in the NPA is modelled on the paragraph of the FAA AC 25-17A quoted below:

'Paragraph (b). As required by Appendix F, foam shall be tested in 1/2-inch thickness. If the cushion consists of two or more foams glued together, the foam specimens should be two 1/4-inch (three 1/6-inch, etc.) pieces glued together. Three specimens should be made for each combination of foams that are glued together in the production cushion. Any other production cushion components that are glued together, should be tested together. If such specimens do not pass, it is acceptable to test each production cushion component separately, including a sheet of glue. Additionally, the Bunsen burner is then applied to three separate corners of the production cushion with all its components. The cushion is satisfactory if all tests meet the test criteria. The three corner tests need not be conducted, if the cushion passes the tests of part II of Appendix F at Amendment 25-59.'

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When materials constituting the mattresses are tested individually in the 12s Vertical Bunsen Burner Test, and not their combination, it is necessary to conduct additional Bunsen Burner tests (12s Vertical), namely on three different corners of the cushion assembly. This is considered as an alternative to the Oil Burner Test described in Appendix F Part II.

The meaning of 'production mattress' is also considered as self-explanatory: the guidance allows a deviation from the requirement to test assemblies and not individual materials, but only for seat cushions. As a compensation for testing individual materials, an additional evaluation at cushion assembly level must be performed, either through an Oil Burner Test, or through the Bunsen Burner test on three different corners of the assembly. The NPA expands the applicability of such guidance to mattresses.

To conclude with, the proposed wording is consistent with what is currently applicable to seat cushions through the application of the FAA AC 25-17A. It is considered clear enough and no additional guidance is believed to be needed, based on the experience acquired on seat cushions flammability resistance demonstrations.

comment *292* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.20(a)(1)
Extract:
Additionally, the Bunsen burner is then to be applied at three separate corners of the production mattress with all its components. The three-corner test need not be conducted if the cushion passes the tests of CS-25, Appendix F, Part II.

Comment:
The three-corner test definition is missing

Requested change and proposed text
Clarify test procedure and pass/fail criteria for the three-corner test.

response *See the response to comment 247.*

comment *343* comment by: *GAMA*

Page 61, AMC S25.20(a)(1)
S25.20(a) refers to permanent bed installations. EASA should clarify that these same requirements would not apply to non-permanent beds. Some airplane configurations have inflatable mattresses and some are even required to meet FAA requirements, such as a flatbed for flight crew sleeping facilities.

"Additionally, the Bunsen burner is then to be applied at three separate corners of the production mattress with all its components. The three-corner test need not be conducted if the cushion passes the tests of CS-25, Appendix F, Part II."

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The three-corner test definition is missing and the definition of a “production mattress” will need to be provided.

response *Not accepted.*

The clarification on permanent/non-permanent beds is not deemed necessary since it is clear from the requirement and AMC text.
Regarding the guidance on the ‘three-corner test’, See the response to comment 247.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.20(b) Access to Type III and IV Emergency Exits p. 61-62

comment *19* comment by: *AIRBUS*

Comment No.19: AMC S25.20(b) Access to Type III and IV Emergency Exits

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 61/81, Appendix AMC S25.20(b)

2. PROPOSED TEXT / COMMENT:
With Airbus comment number 19 the proposed text indicates:

(2) The alerting system in the cabin, required in Paragraph (1), includes an aural device (…), as well as a prominent electrically illuminated sign showing an appropriate text message or pictogram, in the immediate proximity of the relevant emergency exit.

The term “prominent” is excessive as it is never existing elsewhere in CS-25, thus making this sign with an increased level of requirement not justified as compared to other signs for floor level exits (even more important exits, but with less visibility requirement for the signs).

Suggest removing the word “prominent”.

3. RATIONALE / REASON / JUSTIFICATION FOR THE COMMENT:
Airbus is making changes to the excessive requirement with no justification as compared to other cabin interior signs.

response *Partially accepted.*

Prominent was used for conspicuous. A flush sign is acceptable. The text has been amended accordingly.

comment *72* ❖ comment by: *Andrew Hanley (Jet Aviation)*

AMC S25.10(a) Interior Doors on Non-Commercially Operated Aeroplanes

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AMC S25.10(b) Interior Doors on Commercially Operated Aeroplanes
The indication (...) the crew to take appropriate action before entering the **approach** phase.

AMC S25.20(b) Access to Type III and IV Emergency Exits
(1) A position monitoring (...) before entering any of the taxiing, take-off, **approach** and landing phases.
(…)
(4) The alerting system (...) triggered at the latest during descent, allowing enough time prior to entering the **approach** phase. The aural and visual alerts should both remain on until the obstacle is properly stowed.

Referring to the approach phase is unrealistic, and far more stringent than the existing special conditions.

For the crew to take appropriate action before entering approach, the alert has to be triggered by the phase preceding approach, which is descent. Consequently, the door would have to be open while the airplane is still in cruise, to avoid routine warning at each beginning of descent. It is far too early in the flight, which increases the likelihood that occupants will not follow the door closing instruction. Moreover, it is likely that the door alerting system will become a routine warning, thus losing its attention getting qualities.

An alarm should not be used as a reminder to the crew to execute its duty of preparing the cabin for landing and triggering such system automatically (or manually above 10,000 feet) is a lot too early leading to often triggering the alarm, and thus creating human factor risks of flight crew ignoring the too frequent alarm.

The technical viability for aircraft modifiers to tap into OEM flight management systems to create an automatic warning system can be extremely complex. A more simple solution of adding a manual “approach” switch in the flight deck could be envisaged but as already mentioned, such solutions are adding cabin configuration tasks on to the flight crew with potential of diverting their attention away from their flight duties.

For the reasons given above, it is suggested to remove the “approach” portion of the text.

Suggested text change:
AMC S25.10(a)
AMC S25.10(b)
~~When preparing for landing, the indication should be triggered during the descent phase, early enough to enable the crew to take appropriate action before entering the **approach** phase.~~

AMC S25.20(b)
A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off~~,~~ ~~**approach**~~ and landing phases.

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response *Not accepted.*

The compensating features requested under S25.20(b) are the following:

- *Per aircraft flight manual normal procedure, the crew shall provide the passengers with a pre-flight briefing, in order to make them aware of the possible obstruction, instruct them to remove the obstruction when needed and explain them how.*
- *Per aircraft flight manual normal procedure, the crew shall ensure before landing that the cabin is in the correct configuration for landing, including that the obstruction of the exit is removed.*
- *Should the passengers not follow these instructions (forgetting or neglecting) and the crew not adequately check the cabin configuration before approach (forgetting or neglecting), a visual indication is triggered in the cockpit as a reminder for the crew.*
- *Should the crew ignore the visual indication in the cockpit, for instance because not considered a priority under critical conditions, an alerting system is provided in the cabin, including an irritating buzzer and a conspicuous illuminating sign.*

The basic assumption in establishing a level of safety as specified in the essential requirements of Annex I to Regulation (EC) No 216/2008 is that the obstruction in the egress path will be removed before entering the critical phases of flights (take-off and landing). This can only be true if the alerting system provided in the cabin is triggered early enough, in order to allow a cabin occupant to move, if needed, within the cabin to reach the deployable item obstructing the exit. EASA has reviewed the AFM of several business aeroplanes and concluded that between the time of the extension of the flaps during approach and the actual touch down for landing, there might be no more than 3 to 5 minutes. It is believed that this timeframe could not be sufficient for an occupant who is put under pressure because of the buzzer annoying sound of the alert in cabin and because the aeroplane might be in a degraded mode (engine fire, engine shut-down, or any other conditions) and reluctant to stand-up because submitted to untimely accelerations induced by turbulences to restore the egress path. For this reason, EASA believes that the appropriate cabin configuration for landing should be ensured before entering the approach phase.

comment *82* comment by: *Andrew Hanley (Jet Aviation)*

This AMC only pertains to S25.20(b)(1). To avoid confusion and misinterpretation it is suggested to correct heading reference.

Suggested text change:
AMC to Appendix S, S25.20(b)**(1)**

response *Accepted.*

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comment *83* comment by: *Andrew Hanley (Jet Aviation)*

§ (6)

This requirement is incommensurate with the failure severity. The same safety level is required from the indicating system as that required by CS 25.783 (b)(2) for the loss of the emergency exit opening, which severity is much higher. The EIR WG proposal was 10-3. In addition, current systems are certified with a safety analysis showing 10-5 for the loss of the alerting system together with the need to evacuate. What is the adverse service experience which justifies strengthening the requirement?

Suggested text change:
(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than 10-3 per hour of flight.

response *Accepted.*

See the response to comment 45.

comment *84* comment by: *Andrew Hanley (Jet Aviation)*

Missing an AMC S25.20(b)(2) to explain how to determine the impact of the obstruction on the number of passengers (so called latin square method in the explanatory notes).

Add AMC S25.20(b)(2) to explain how to define the impact of the obstruction on the number of passengers using the latin square method.

Suggested text change:
Use of the latin square method as detailed in Appendix 4 to the FAA Advisory Circular 25-17A Transport Airplane Cabin Interiors Crashworthiness Handbook, dated 05/18/09 is accepted by the Agency as providing acceptable means of compliance to S25.20(b)(2).

response *Accepted.*

An AMC has been added to address this need for clarification.

comment *105* comment by: *LHT DO*

EASA is kindly requested to provide definition of "approach phase".

Requiring the indication to the flight crew already in the descent phase is considered overly stringent. Proper cabin crew procedures will ensure that stowable items are in their safe

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position when preparing for landing. If any item is not in its safe position, an indication to the flight crew after entering the approach phase is considered appropriate. This will still allow the cabin crew to take appropriate action if required.

response *See the responses to comments 102 and 72.*

comment *216* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off, approach and landing phases

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off and landing phases

response *Not accepted.*

See the response to comment 72.

comment *217* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC S25.20(b)(2):
… as well as a prominent electrically illuminated sign showing ...

Comment:
This wording is unusual. The usual wording in CS 25 is attention getting, or conspicious. Unless the purpose is to have a sign phisically prominent, which would be incompatible with the customer requirements of VIP interiors, and it would give this sign the highest importance among all the signs in the cabin, which seems excessive and tends to tell the passengers that the other signs are of secondary nature.

Requested change and proposed text
… as well as an electrically illuminated sign showing ...

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response | *Partially accepted.*

The word 'prominent' has been replaced by 'conspicuous'.

comment | *218* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC S25.20(b)(4):
... is moved away from the safe position during any of the taxiing, take-off, approach and landing flight phases, or if ...

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
... is moved away from the safe position during any of the taxiing, take-off and landing flight phases, or if ...

response | *Not accepted.*

See the response to comment 72.

comment | *219* comment by: *Dassault-Aviation*

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Dassault Aviation comment

Extract AMC S25.20(b)(6):
(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than remote

Comment:
This requirement is uncommensurate with the failure severity. The same safety level is required from the indicating system as that required by CS 25.783 (b)(2) for the loss of the emergency exit opening, which severity is much higher. The EIR WG proposal was 10-3. In addition, current systems are certified with a safety analysis showing 10-5 for the loss of the alerting system together with the need to evacuate. What is the adverse service experience which justifies to strengthen the requirement ?

Requested change and proposed text
(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than 10-3 per hour of flight.

response *Accepted.*

See the response to comment 45.

comment *220* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC S25.20(b)(7):
(7) Instructions are given to the passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that the obstacle should be stowed before entering any of the taxiing, take-off, approach and landing phases.

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
(7) Instructions are given to the passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that the obstacle should be stowed before entering any of the taxiing, take-off and landing phases.

response *Not accepted.*

See the response to comment 72.

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comment *221* comment by: *Dassault-Aviation*

Dassault Aviation comment

Comment:
Missing an AMC S25.20(b)(2) to explain how to determine the impact of the obstruction on the number of passengers (so called latin square method in the explanatory notes).

Requested change and proposed text
Add AMC S25.20(b)(2) to explain how to define the impact of the obstruction on the number of passengers using the latin square method.

response *Accepted.*

See the response to comment 84.

comment *248* comment by: *Bombardier*

Reference NPA AMC S25.20(b):
(2) The alerting system in the cabin, required in Paragraph (1), includes an aural device which sounds continuously in all areas of the passenger cabin (it should be loud enough to clearly act as an irritant, thus assuring that occupants will stow the obstruction, but not so loud as to annoy the flight crew), as well as a prominent electrically illuminated sign showing an appropriate text message or pictogram, in the immediate proximity of the relevant emergency exit.
(3) For aeroplanes where at least one cabin crew member is required to be on board all flights, the alert defined in Paragraph (2) may also be directed to a cabin crew member.

Comment:
Paragraph (3) refers to "the alert" defined in paragraph (2) in the singular whereas paragraph (2) states that the alerting system includes an aural device as well as an electrically illuminated sign.

If retained, paragraph (3) should be updated to indicate whether it is the aural, visual or both alerts that may also be directed to a cabin crew member.

That being said, as written, directing any alert to the cabin crew member is optional and does not provide relief from the requirement that the alerting system provide indication in the passenger cabin itself. For this reason, it is concluded that there is no justification for including paragraph (3) in the AMC.

response *Accepted.*

Paragraph 3 has been deleted.

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comment	*249* comment by: *Bombardier* **Reference NPA AMC S25.20(b):** (8) A description of the position monitoring and alerting system is made available to the flight crew, and the AFM includes a limitation requiring a preflight passenger briefing covering the aspects described in Paragraph (7) … **Comment:** The use of the word "limitation" implies that the information must be included in the Limitations section of the AFM. It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2). The following is the suggested revised text: *(8) the position monitoring and alerting system as well as the aspects described in Paragraph (7) must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM …*
response	*Accepted.*

comment	*250* comment by: *Bombardier* **Reference NPA AMC S25.20(b):** (9) The emergency exit provided when the obstruction in its most adverse position(s) is at least as effective as a Type IV exit unless it can be shown that following any single failure, an exit at least as effective as a Type IV exit can be obtained by simple and obvious means. If the obstructing item is a seat, the normal seat operating controls (e.g. track, swivel, recline etc.) may be considered as means meeting the simple and obvious requirement, provided that the controls remain visible to a person approaching the seat and are easily useable without sitting on the seat, when the seat is in any possible obstructing condition. **Comment:** It is noted that seat operating controls may be electrically powered but that the emergency evacuation procedure includes a step to remove power from almost all aircraft systems (exceptions would be emergency lights and any other system powered directly by the aircraft batteries). It is recommended that obstructing items that are normally powered by the airplane's electrical system be evaluated without any external source of power available.
response	*Not accepted.* *This AMC also requires that the alert should sound early enough to stow the obstruction before landing. Consequently, the case considered by the AMC is not a post-crash scenario, but a scenario where the aeroplane is flying without expectation of a crash.*

comment	*293* comment by: *Greenpoint Technologies* Greenpoint Technologies comment

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AMC 25.20(b)
Extract:
(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off, approach and landing phases

Comment:
Same comment as for similar paragraph in AMC S25.10(a) about approach phase.

Requested change and proposed text
(1) A position monitoring system is installed, which detects that item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to flight crew if item is not properly stowed before entering any of the taxiing, take-off and landing phases

response *Not accepted.*

See the response to comment 72.

comment *294* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.20(b)
Extract:
… as well as a prominent electrically illuminated sign showing ...

Comment:
This wording is unusual. The usual wording in CS 25 is attention getting, or conspicious. Unless the purpose is to have a sign phisically prominent, which would be incompatible with customer requirements of VIP interiors, and it would give this sign the highest importance among all signs in the cabin, which seems excessive and tends to tell the passengers that other signs are of secondary nature.

Requested change and proposed text
… as well as an electrically illuminated sign showing ...

response *Partially accepted.*

See the response to comment 19.

comment *295* comment by: *Greenpoint Technologies*

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Greenpoint Technologies comment

AMC 25.20(b)
Extract:
... is moved away from the safe position during any of the taxiing, take-off, approach and landing flight phases, or if ...

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
... is moved away from the safe position during any of the taxiing, take-off and landing flight phases, or if ...

response *Not accepted.*

See the response to comment 72

comment *296* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.20(b)
Extract:
(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than remote

Comment:
This requirement is uncommensurate with the failure severity. The same safety level is required from an indicating system as that required by CS 25.783 (b)(2) for the loss of the emergency exit opening, where severity is much higher. The EIR WG proposal was 10-3. In addition, current systems are certified with a safety analysis showing 10-5 for the loss of an alerting system together with the need to evacuate. What is the adverse service experience which justifies to strengthen the requirement ?

Requested change and proposed text
(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than 10-3 per hour of flight.

response *Accepted.*

See the response to comment 45.

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comment *297* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.20(b)
Extract:
(7) Instructions are given to the passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that the obstacle should be stowed before entering any of the taxiing, take-off, approach and landing phases.

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about approach phase.

Requested change and proposed text
(7) Instructions are given to passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that obstacle should be stowed before entering any of the taxiing, take-off and landing phases.

response *Not accepted.*

See the response to comment 72

comment *298* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC 25.20(b)
Comment:
Missing an AMC S25.20(b)(2) to explain how to determine the impact of obstruction on the number of passengers (so called latin square method in the explanatory notes).

Requested change and proposed text
Add AMC S25.20(b)(2) to explain how to define the impact of obstruction on the number of passengers using the latin square method.

response *Accepted.*

See the response to comment 84.

comment *344* comment by: *GAMA*

Page 61, AMC S25.20(b)
The introductory paragraph's applicability is confusing and it is unclear when access is

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directly tied to S25.10(b) for interior doors. Please provide rationale and clarification.
"(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off, approach and landing phases

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
"(1) A position monitoring system is installed, which detects that the item is not properly stowed, and triggers both an alerting system in the cabin and a visual indication to the flight crew if the item is not properly stowed before entering any of the taxiing, take-off and landing phases"

"(2)… as well as a prominent electrically illuminated sign showing ..."

This wording is unusual. The usual wording in CS 25 is attention getting, or conspicious. Unless the purpose is to have a sign physically prominent, which would be incompatible with the customer requirements of VIP interiors, and it would give this sign the highest importance among all the signs in the cabin, which seems excessive and tends to tell the passengers that the other signs are of secondary nature.

Requested change and proposed text
"… as well as an electrically illuminated sign showing ..."

"(4)... is moved away from the safe position during any of the taxiing, take-off, approach and landing flight phases, or if ..."

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
"... is moved away from the safe position during any of the taxiing, take-off and landing flight phases, or if ..."

response

Not accepted.

See the response to comment 72.

comment

345 comment by: *GAMA*

"(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than remote

Comment:
This requirement is incommensurate with the failure severity. The same safety level is required from the indicating system as that required by CS 25.783 (b)(2) for the loss of the emergency exit opening, which severity is much higher. The EIR WG proposal was 10-3. In

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addition, current systems are certified with a safety analysis showing 10-5 for the loss of the alerting system together with the need to evacuate. What is the adverse service experience which justifies strengthening the requirement?

Requested change and proposed text
"(6) The total failure of both the position monitoring and alerting system (failure to alert both in the cabin and cockpit that a deployable item is not properly stowed) is not more probable than 10-3 per hour of flight."

"(7) Instructions are given to the passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that the obstacle should be stowed before entering any of the taxiing, take-off, approach and landing phases."

Comment:
Same comment as for the similar paragraph in AMC S25.10(a) about the approach phase.

Requested change and proposed text
(7) Instructions are given to the passengers and cabin crew (if any), by means of appropriate placards and a preflight briefing, that the obstacle should be stowed before entering any of the taxiing, take-off and landing phases.

(8) The use of the word "limitation" implies that the information must be included in the Limitations section of the AFM.

It is suggested that the required information be made available to the flight crew and that there be a requirement for a procedure to brief the passengers as per S25.40(a)(2).

The following is the suggested text:
"(8) the position monitoring and alerting system as well as the aspects described in Paragraph (7) must be the subject of a passenger briefing, and the requirement for this briefing must be part of the AFM …"

It is noted that seat operating controls may be electrically powered but that the emergency evacuation procedure includes a step to remove power from almost all aircraft systems (exceptions would be emergency lights and any other system powered directly by the aircraft batteries).
It is recommended that obstructing items that are normally powered by the airplane's electrical system be evaluated without any external source of power available.

Missing language in an AMC S25.20(b) to explain how to determine the impact of the obstruction on the number of passengers (so called latin square method in the explanatory notes).

Requested change and proposed text
Add language to AMC S25.20(b) to explain how to define the impact of the obstruction on the number of passengers using the latin square method.

response | *See the responses to comments 45, 72, 249.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.30(a) Width of Aisle p. 62-63

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comment	*20* comment by: *AIRBUS* **AIRBUS Comment No. 20: AMAIRBUS Comment Nr. 20: AMC S25.30(a) Width of Aisle** **1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:** Page 62/81, Appendix AMC S25.30(a)(2) **2. PROPOSED TEXT / COMMENT:** AIRBUS proposed text indicates: (2) Negotiating of an obstacle may require the removal and/or movement of more than one item, provided that this can be performed rapidly. The comment is on the words "provided that this can be performed rapidly" that should be removed as this local performance requirement should be superseded by the overall performance objectives of AMC S25.30(a)(6). In addition, in that context, these words will generate unnecessary discussions and uneven level playing fields because too sensitive to interpretation. **3. RATIONALE / REASON / JUSTIFICATION for the Comment:** The excessive local requirement vs. global performance criteria.
response	*Accepted.*

comment	*75* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland* AMC to S25.30(a) §(4) page 62 The NPA proposed text provided the guidance that maintaining gaps of less than 3.5 cm (1.38 in.) is considered acceptable to eliminate the risk of entrapment. Above a certain gap, no risk of entrapment exist. Therefore the criteria should be: maintaining gaps of less than 3.5 cm (1.38 in.) or more than 10.0 cm (TBD) is considered acceptable to eliminate the risk of entrapment.
response	*Not accepted.* *The case of large gaps would need further consideration. It is proposed to rather evaluate such design on a case-by-case basis.*

comment	*85* comment by: *Andrew Hanley (Jet Aviation)* § (1) & (2)

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The word “rapidly” is subjective and should be removed as this local performance requirement should be superseded by the overall performance objectives of AMC S25.30(a)(6).

In addition, in that context, these words will generate unnecessary discussions and uneven level playing fields because too sensitive to interpretation.

Suggested text change:
(1) An obstacle in the passeway is considered easily surmountable if the aisle width reduction it creates may be ~~rapidly~~ negotiated by a 5th percentile female or 95th percentile male.

(2) Negotiating of an obstacle may require the removal and/or movement of more than one item~~., provided that this can be performed rapidly.~~

response *Accepted.*

comment *86* comment by: *Andrew Hanley (Jet Aviation)*

§ (3)

There is no rationale in requiring that the obstacle does not fail after being stepped on. This criteria was proposed by the EIR WG, but based on a 300 lbs load representative of a real case. 500 lbs is a lot more, it adds safety margins to the realistic 300 lbs case, and consequently there is no reason to keep the same criteria. In addition, it is very unlikely that devices such as leg rests would withstand this load without failure.

Suggested text change:
(3) If an obstacle is stepped on, it should be capable of withstanding a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location without becoming a safety hazard.

OR

Suggest keeping the words “without failure” and keeping the initial proposal of the SLRG of a maximum vertical step force of 300lbs.

response *See the response to comment 124.*

comment *106* comment by: *LHT DO*

Item (3) requires "If an obstacle is stepped on, it should be capable of withstanding without

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	failure a vertical step force of 222 daN (500 lbs) " LHT proposes to change the wording to allow deformation of an obstacle, provided it can be demonstrated this has no adverse effect on the ease of accessibility to all cabin areas as required by S25.30(a)(1).
response	*See the response to comment 124.*

comment	*124* comment by: *Airbus Operations GmbH* **Airbus Comment No. 21 on:** **- AMC S25.30(a) Width of Aisle** **1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:** Page 62/81, Appendix AMC S25.30(a) **2. PROPOSED TEXT / COMMENT:** The proposed text indicates: *(3) If an obstacle is stepped on, it should be capable of withstanding without failure a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location.* **Airbus Comment:** The term "without failure" is excessive and not in total line with the initial proposal of the SLRG which was proposing to authorize items whose incapability to sustain relatively high stepping loads may appear obvious to the crew or passengers, and therefore whose collapse when stepping on it will not be enough surprising to the extent to unsteady a person trying to surmount that obstacle. As an example, if the obstacle is a legrest which is normally designed to be easily storable by the passengers (therefore designed to not sustain a moderate load for stowing), it is foreseeable that it will naturally "collapse" by stepping on it. Thus, the crew or passenger should not be enough surprised to the extent of being unsteadied while trying to surmount it. Airbus suggests removing the words "without failure" and adding "to the extent to unsteady a person trying to surmount that obstacle." *(new/revised text <u>underlined</u>, removed text ~~strikethrough~~)*,ie. *(3) If an obstacle is stepped on, it should be capable of withstanding ~~without failure~~ a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location, <u>without failure to the extent to unsteady a person trying to surmount that obstacle.</u>* OR Suggest keeping the words "without failure" and keeping the initial proposal of the SLRG ofa maximum vertical step force of 130 daN (300 lbs).

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Eventually, a new guidance material could be developed to further elaborate on the fact that the collapse, or even the failure, of some items may be accepted as long as they appear obvious enough as not being capable to withstand without collapsing, or breaking when stepping on it (because they are visually appearing weak, or because an extremely adverse stepping location – eg. creating a high lever effect - is very unlikely).

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
Excessive requirement leading to over-size cabin elements with non-safety related reasons..

response *Accepted.*

Option 1 has been retained.

comment *125* comment by: *Airbus Operations GmbH*

Airbus Comment No. 22 on:

- AMC S25.30(a) Width of Aisle

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 62/81, Appendix AMC S25.30(a)(4)

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:

(4) When assessing compliance, the applicant should select the most adverse in-flight configuration(s).(…) . However, the specific aisle obstruction may dictate other positions to be considered.

Airbus Comment:

The comment is on the words “However, the specific aisle obstruction may dictate other positions to be considered.” that should be removed as this is bringing no further guidance related to the fact that the applicant should defend the “most adverse in-flight configuration(s)” considered.

The purpose is to show compliance based on “envelope” cases (“most adverse”) in order to not duplicate the number of tests required.

3. RATIONALE / REASON / JUSTIFICATION for the Comment:
As it is written, it leaves the door open to EASA expert to request to test many more configurations than the ones required.

response *Accepted.*

comment *222* comment by: *Dassault-Aviation*

Dassault Aviation comment

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Extract AMC S25.30(a)(2):
Negotiating of an obstacle may require the removal and/or movement of more than one item, provided that this can be performed rapidly

Comment:
The word "rapidly" is extremely subjective and brings more confusion than clarification. It is not needed as § (6) already provides a time criteria.

Requested change and proposed text
Negotiating of an obstacle may require the removal and/or movement of more than one item.

response *Accepted.*

comment *223* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract AMC S25.30(a)(3):
(3) If an obstacle is stepped on, it should be capable of withstanding without failure a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location

Comment:
There is no rationale in requiring that the obstacle does not fail after being stepped on. This criteria was proposed by the EIR WG, but based on a 300 lbs load representative of a real case. 500 lbs is a lot more, it adds safety magins to the realistic 300 lbs case, and consequently there is no reason to keep the same criteria. In addition, it is very unlikely that devices such as leg rests would withstand this load without failure.

Requested change and proposed text
(3) If an obstacle is stepped on, it should be capable of withstanding a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location without becoming a safety hasard.

response *Partially accepted.*

See the response to comment 124.

comment *224* comment by: *Dassault-Aviation*

Dassault Aviation comment

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Extract AMC S25.30(a)(4):
However, the specific aisle obstruction may dictate other positions to be considered.

Comment:
An AMC is supposed to provide guidance, but with such a sentence the target is missed because the sentence leaves the door completely open to any kind of deviation to the interpretation. It will most likely result in endless discussions during certification projects, which is what this Appendix S is aiming to avoid. In addition, it is general common sense that if a design is so specific that the AMC does not apply, then something else has to be done.

Requested change and proposed text
Remove this sentence.

response *Accepted.*

comment *251* comment by: *Bombardier*

Reference NPA AMC S25.30(a):
(3) If an obstacle is stepped on, it should be capable of withstanding without failure a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location.

Comment:
Bombardier considers that 500 lbs is excessive since it does not take into consideration the transient nature of the point load; for example, when stepping on the obstruction the crew member is unlikely to jump onto the obstruction but will instead be using it as a stepping off point to sustain already established forward motion toward the hazard.

Furthermore, no guidance is provided for a more evenly distributed load as would be the case if the crew member momentarily sits on a surface (eg table top) to navigate an obstruction. In particular, the crew member would unlikely "sit" at the edge of the surface since this would be of little advantage when navigating the obstruction.

response *Partially accepted.*

See the response to comment 124.

comment *252* comment by: *Bombardier*

Reference NPA AMC S25.30(a):
(4) When assessing compliance, the applicant should select the most adverse in-flight configuration(s). The selection should include all possibilities regardless of subjective issues, such as the likelihood that passengers may consider the configuration advantageous.

Comment:
Bombardier disagrees that non-normal configurations be considered when assessing

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compliance with the “width of aisle” requirements.

For seats in particular, a range of motion is necessary in order to accommodate changes to the configuration of the seat (eg from takeoff and landing configuration to a berthing configuration), which is likely to provide for the possibility of seat configurations that simply cannot be used.

To customize seat structures (eg swivel lock positions) to prevent some seats from locking in positions that cannot be used while other seats require the locking in the same position may result in additional costs and certification efforts that are not justified by what would be negligible improvement in overall safety.

Bombardier and Transport Canada have collaborated in the past to define seating positions that are considered normal and non-normal; it was agreed that when assessing decompression features, seats only need to be assessed in their normal positions except for cases where seats in non-normal positions could result in catastrophic damage to the airplane.

A similar approach is encouraged when assessing access to the passenger compartment.

response

Partially accepted.

To a degree, EASA accepts the point made by this comment. Adverse configurations do not need to be directly and themselves usable by cabin occupants in order for their inclusion in the requested analysis to be justified. Some configurations may occur, for instance, due to cabin occupant inattention after they have partially moved an item and then decided to move to and remain in another part of the cabin. On the other hand, it can be envisaged that some cabin configurations, although possible, are highly unlikely to be selected and left in that state.

The AMC text will be revised to introduce the possibility to justify the elimination of such configurations from the assessment of aisle width obstruction.

comment *299* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC S25.30(a), § (2)
Extract:
Negotiating of an obstacle may require the removal and/or movement of more than one item, provided that this can be performed rapidly

Comment:
The word "rapidly" is extremely subjective and brings more confusion than clarification. It is not needed as § (6) already provides a time criteria.

Requested change and proposed text
Negotiating of an obstacle may require removal and/or movement of more than one item.

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response *Accepted.*

The text will be amended as suggested.

comment *300* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC S25.30(a), § (3)
Extract:
(3) If an obstacle is stepped on, it should be capable of withstanding without failure a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location

Comment:
There is no rationale in requiring that the obstacle does not fail after being stepped on. This criteria was proposed by the EIR WG, but based on a 300 lbs load representative of a real case. 500 lbs is a lot more, it adds safety magins to the realistic 300 lbs case, and consequently there is no reason to keep the same criteria. In addition, it is very unlikely that devices such as leg rests would withstand this load without failure.

Requested change and proposed text
(3) If an obstacle is stepped on, it should be capable of withstanding a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location without becoming a safety hasard.

response *Partially accepted.*

See the response to comment 124.

comment *301* comment by: *Greenpoint Technologies*

Greenpoint Technologies comment

AMC S25.30(a), § (4)
Extract:
However, the specific aisle obstruction may dictate other positions to be considered.

Comment:
An AMC is supposed to provide guidance, but with such a sentence the target is missed because the sentence leaves the door completely open to any kind of deviation to interpretation. It will most likely result in endless discussions during certification projects, which is what this Appendix S is aiming to avoid. In addition, it is general common sense that if a design is so specific that the AMC does not apply, then something else has to be

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done.

Requested change and proposed text
Remove this sentence.

response *Accepted.*

The text will be amended as suggested.

comment *303* comment by: *Andrew Hanley (Jet Aviation)*

§ (1)

Should read "and" as both 5th percentile female and 95th percentile male should be able to negotiate the obstacle not only one.

Suggested text change:
(1) An obstacle in the passeway is considered easily surmountable if the aisle width reduction it creates may be rapidly negotiated by a 5th percentile female **and** ~~or~~ 95th percentile male.

response *Partially accepted.*

The need for a change is accepted, however the proposal introduces a possible new confusion because it might be understood that both a 5th percentile female and a 95th percentile male must be able to pass simultaneously and/or the text accepts an obstruction that could be squeezed through by the small female or climbed over easily by a large male, but could not be negotiated rapidly by a person of an intermediate size. An alternative new text as follows will be utilised.

'(1) An obstacle in the passageway is considered easily surmountable if the aisle width reduction it creates may be negotiated by a person anywhere in the size range from a 5th percentile female to a 95th percentile male.'

comment *346* comment by: *GAMA*

Page 62, AMC S25.30(a)
"Negotiating of an obstacle may require the removal and/or movement of more than one item, provided that this can be performed rapidly"

The word "rapidly" is extremely subjective and brings more confusion than clarification. It is not needed as § (6) already provides a time criteria.

Requested change and proposed text

"Negotiating of an obstacle may require the removal and/or movement of more than one item."

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"(3) If an obstacle is stepped on, it should be capable of withstanding without failure a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location.

There is no rationale in requiring that the obstacle does not fail after being stepped on. This criteria was proposed by the EIR WG, but based on a 300 lbs. load representative of a real case. 500 lbs. is a lot more, it adds safety margins to the realistic 300 lbs. case, and consequently there is no reason to keep the same criteria. In addition, it is very unlikely that devices such as leg rests would withstand this load without failure.

Requested change and proposed text
(3) If an obstacle is stepped on, it should be capable of withstanding a vertical step force of 222 daN (500 lbs) applied at the most adverse stepping location without becoming a safety hazard.

"However, the specific aisle obstruction may dictate other positions to be considered."

An AMC is supposed to provide guidance, but with such a sentence the target is missed because the sentence leaves the door completely open to any kind of deviation to the interpretation. It will most likely result in endless discussions during certification projects, which is what this Appendix S is aiming to avoid. In addition, it is general common sense that if a design is so specific that the AMC does not apply, then something else has to be done.

Requested change and proposed text
Remove this sentence.

response *See the responses to comments 20, 124, 125*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to AppendixS — S25.40(b) Briefing Card Placard p. 64

comment *253* comment by: *Bombardier*

Reference NPA AMC S25.40(b):
For example, and where applicable, a briefing card may be used to deliver information related to setting seats in the upright position, stowing leg rests/armrests, repositioning 'high–low' position tables, opening/closing doors, installing crash pads, etc.

Comment:
The AMC suggests that having occupants install removable crash pads in order to comply with occupant safety requirements such as HIC would be an acceptable means of compliance.

If this is not the case then the words "installing crash pads" should be deleted from the guidance.

response *Not accepted.*

EASA and the FAA have indeed approved designs where passengers are required to install crash pads to meet occupant protection criteria.

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comment	*254* comment by: *Bombardier* **Reference NPA AMC S25.40(b):** (3) The briefing card should be demonstrated to be accessible from each passenger seat … the Agency may accept that either the left hand (LH) or right hand (RH) place of the divan will mostly be occupied … **Comment:** Typographical error; the word “mostly” probably should be the words “most likely”.
response	*Accepted.*

comment	*347* comment by: *GAMA* **Page 64, AMC S25.40(b)** The AMC suggests that having occupants install removable crash pads in order to comply with occupant safety requirements such as HIC would be an acceptable means of compliance. If this is not the case then the words “installing crash pads” should be deleted from the guidance. Typographical error; the word “mostly” probably should be the words “most likely”.
response	*Not accepted.* *See the response to comment 253.*

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.50(a)(2) Cabin Attendant Direct View p. 65

comment	*302* comment by: *Greenpoint Technologies* Greenpoint Technologies comment AMC S25.50(b), § (1) Comment: The EIR WG proposal contained a section to define passenger areas, with guidance on the type of latch to install in such areas. We feel this section was useful. Requested change and proposed text Add a section (iii): Passengers Areas are zones in which passenger seats designed for occupancy during taxi, take-off and landing are installed. In such cabin areas, if the means used to prevent contents in the compartments from becoming a hazard by shifting is a latched door, the design should take into consideration the wear and deterioration expected in service.

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response *Accepted.*

Note: the whole AMC to S25.50(b) has now been transferred to AMC to CS 25.787. See comment 161 and the response thereto.

3.2.2. Draft amendment to CS-25 — Book 2 — AMC to Appendix S — S25.50(b) Stowage Compartment Latching Mechanisms p. 66-67

comment *225* comment by: *Dassault-Aviation*

Dassault Aviation comment

Comment:
The EIR WG proposal contained a section to define passenger areas, with guidance on the type of latch to install in such areas. We feel this section was useful.

Requested change and proposed text
Add a section (iii): Passengers Areas are zones in which passenger seats designed for occupancy during taxi, take-off and landing are installed. In such cabin areas, if the means used to prevent the contents in the compartments from becoming a hazard by shifting is a latched door, the design should take into consideration the wear and deterioration expected in service.

response *Accepted.*

Note: the whole AMC to S25.50(b) has now been transferred to AMC to CS 25.787. See comment 161 and the response thereto.

comment *255* comment by: *Bombardier*

Reference NPA AMC S25.150(b):
(iii) Incorrect Latching Indication: all latch mechanisms should be provided with a means to indicate incorrect latching. This means should provide a clear optical indication, easily visible to anyone in the vicinity of the incorrectly latched item, whenever a latching mechanism is improperly engaged. In the case of a double-latch system, a single incorrect latching indication may be used to show the position of the two latches if it can be demonstrated that the failure of either latch, or both latches, to properly engage cannot result in an indication of correct compartment latching.

Comment:
This is a significant deviation from existing designs and not at all consistent with the intent of this rulemaking activities which is to provide a set of requirements and guidance appropriate for non-commercially operated and low occupancy airplanes.

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In light of the risk to the flying public, the new requirements and guidance should be focused on features that are unique to executive interiors or the existing requirements (ie those developed to address safety issues on airliners) that unnecessarily burden manufacturers and modifiers of business jets.

Proper latching of doors and drawers is typically indicated by the closed door or drawer being flush to its surroundings; a separate means to indicate incorrect latching would be costly to implement and would result in minimal benefit from an occupant safety perspective.

It is considered noteworthy that failure of a door or drawer latching mechanism would be evident during operations (eg door or drawer will not close properly or stay closed).

response *Partially accepted.*

The wording has been amended to be more consistent with the existing acceptable designs. The whole AMC to S25.50(b) has now been transferred to AMC to CS 25.787. See comment 161 and the response thereto.

comment *348* comment by: *GAMA*

Page 66, AMC S25.50(b)
The EIR WG proposal contained a section to define passenger areas, with guidance on the type of latch to install in such areas.
Requested change and proposed text

Add a section (iii): Passengers Areas are zones in which passenger seats designed for occupancy during taxi, take-off and landing are installed. In such cabin areas, if the means used to prevent the contents in the compartments from becoming a hazard by shifting is a latched door, the design should take into consideration the wear and deterioration expected in service.

response *Accepted.*

Note: the whole AMC to S25.50(b) has now been transferred to AMC to CS 25.787. See comment 161 and the response thereto.

6. Appendix — Supplement to the Explanatory Note: Detailed explanation of the dissenting views and arbitration by the Agency p. 75-81

comment *67* comment by: *Federal Office of Civil Aviation (FOCA), Switzerland*

FOCA supports the approach proposed in S25.20(a)(2) p. 79

response *Noted.*
EASA appreciates the support of the Federal Office of Civil Aviation.

comment *126* comment by: *Airbus Operations GmbH*

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Airbus Comment No. 23 on:
- 6. Appendix — Supplement to the Explanatory Note: Detailed explanation of the dissenting views and arbitration by the Agency

1. PAGE / PARAGRAPH / SECTION THE COMMENT IS RELATED TO:
Page 75/81, Appendix 6

2. PROPOSED TEXT / COMMENT:
The proposed text indicates:
6.1. Introduction
The proposed amendments have been drafted by a stakeholder-led rulemaking group (SLRG) (…).
In spite of common efforts to reach a consensus on all proposed changes, the external task leader identified dissenting views between the group members, which were submitted to the Agency for arbitration; the final decision on the NPA publication was left to the Agency.
(…)
6.3. Dissenting views on the new proposed Appendix S, S25.10(e), S25.20(a)(2), and S25.30(a)
The dissenting views on these three proposed amendments to CS-25 have been grouped together since all three relate only to disagreement regarding the extension of the applicability of the concerned requirements to commercially operated (low-occupancy) aeroplanes and not the content of the requirements themselves.
(…) these alleviations have never been authorised for commercial operations. As a result, the luxurious interiors of large airliners designed for commercial operations are often and deliberately proposed with no more than 19 seats that can be occupied during take-off and landing, in order to avoid having to comply with the more demanding requirements.
6.3.1 In-flight obstructions of aisles (S25.30(a))
(…) The Agency decided to support this latter, more conservative approach.
6.3.2 Interior materials flammability requirements (S25.20(a)(2))
(…) The Agency decided to support this latter, more conservative approach.
6.3.3 Deactivation of emergency exits creating a distance of more than 60 ft between exits (S25.10(e))
(…) The Agency decided to support this latter, more conservative approach.

Airbus Comment:

The conservatism of the EASA position with respect to these 3 subjects is not understandable:
- on the one hand, the EASA recognizes valid (as stated in introduction of this appendix) the performance-based criteria developed by the SLRG,
- on the other hand, the EASA finds these cannot be applied on commercial low occupancy aeroplanes with more than 19 passenger seats, since they were never authorized before, and therefore there is no experience.

With such an approach ("no" because we never said "yes"…), there is:
- no possibility to gain the experience the EASA claims does not exist… and on which it is basing its conservative arbitration,
- no possibility to progress towards such requests the SLRG has shown would be safe and in the "Public Interest" of EU Citizens (positive effect on Economy, Jobs…).

The EU industry is currently suffering from the lack of an adapted legal framework for

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commercial on-demand operations with business aircraft (similar to the FAA Part 135), thus penalizing EU operators. This penalty seems even boosted when "conservatism" is retained by the Agency in a rulemaking exercise to an extent that does not not permit the true development of VIP commercial aeroplanes with more than 19 passenger seats (but low occupancy), whereas the involved stakeholders are making the responsible proposal of use of alternate performance-based criteria, establishing a high level of safety but adequate to this kind of transportation.

Airbus kindly requests EASA to:
- re-consider its position, taking now full benefit of this Rulemaking exercise to replace the historical empirical 19 passenger seats limit by the more adapted performance-based criteria proposed by the SLRG in CS-25, and
- launch a new rulemaking task to define an EU legal framework similar to the FAA Part 135 adapted to business aviation's needs, with risk-based applicability criteria replacing the sole historical empirical 19 passenger seats limit.

response *Noted.*

It is acknowledged that in the European regulatory framework, there is no equivalent to the FAA Part 135. However, it is considered that such consideration is out of the scope of this rulemaking task.

comment *226* comment by: *Dassault-Aviation*

Dassault Aviation comment

Extract:
It was agreed, however, that any such allowance for major obstructions would only be considered for aeroplanes with a maximum operational passenger seating configuration of 19 or less

Comment:
It was agreed that such allowance would be considered for private transport airplanes, too. The rule is consistent with this allowance to private transport.

Requested change and proposed text
No change as the proposed rule is consistant with what was actually decided.

response *Noted.*

Explanatory notes will not be re-issued.

comment *349* comment by: *GAMA*

Page 75, 6.2 dissenting view on the new proposed Appendix S, 25.20(b)(2)
"It was agreed, however, that any such allowance for major obstructions would only be considered for aeroplanes with a maximum operational passenger seating configuration of

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	19 or less” It was agreed that such allowance would be considered for private transport airplanes, too. The rule is consistent with this allowance to private transport. Requested change and proposed text No change as the proposed rule is consistent with what was actually decided. **Additional Considerations** GAMA suggests that EASA consider adding accommodations on the airplanes considered herein for relieved criteria for both compliance to 25.795 for flight deck doors and 25.855/25.857 regarding access to Class B baggage compartments.
response	*See the responses to comments 226 and 127.*

3. Additional comments (and responses)

The comments below have been posted on another NPA in CRT but before the deadline for submission of comments; it has therefore been decided to take these comments into account in this document.

The following additional comments are all from Austro Control GmbH:

comment	*A1*
	page Nr: 22 Paragraph: CS 25.807(e)(2)(i) “(i) it is within 9.14 m (30 ft) from the nearest emergency exit on one side of the fuselage on the same deck, and within 13.72 m (45 ft) from the nearest emergency exit on the other side of the fuselage on the same deck; and” Comment/Justification: the wording "on the other side" should be clearly defined; in some interior configurations it may be difficult to apply this correctly, Proposal: it may be beneficial using the term “Center line" of the aircraft as a reference,…
response	*Not accepted.* *EASA considers that the wording is clear enough.*
comment	*A2*
	page Nr: 26 Paragraph: S25.10(a)

	Interior Doors on Non-Commercially Operated Aeroplanes (See AMC to Appendix S, S25.10(a)): a door may be installed Comment: Does the term " a door may be installed " imply that only one door may be installed (the respective AMC is more clear and allows more...)
response	*Accepted.* *The text has been amended accordingly.*
comment	*A3*
	page Nr: 27 Paragraph : S25.10b)2) the door is at a location such that for each passenger and crew member, at least one evacuation path to an emergency exit that does not involve movement through the door remains; Comment: .....does that mean that we could end up with only one exit on one side ?
response	*Partially accepted.* *The need to clarify has been acknowledged. The final text has been reworded and it should now be clear that indeed, it is acceptable to have in that compartment only one exit on one side.*
comment	*A4*
	page Nr : 28 Paragraph : S25.20a) 1) Mattresses of permanent bed installations that are located in compartments isolated…. Comment : intentionally only beds mentioned ? (seats ?) Is this applicable for both , private and low density ?
response	*Noted.* *Seats have to be tested anyway in compliance with CS 25.853(c). Only the applicability of Appendix F Part II to mattresses needed to be clarified, which has been done in the frame of this rulemaking task. This applies to both non-commercially operated aeroplanes (as limited within S25.1) and low occupancy aeroplanes (as defined in S25.1).*
comment	*A5*
	page Nr:36 Paragraph : AMC 25.785h)2 Proposal : We recommend that we add C/A seats which need to be occupied for direct view

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	Justification : often more C/A seats are provided , only some of them fullfill the Direct View Criteria
response	*Not accepted.* *It is recognised there may be a need to provide this information, however the scope of this comment is broader than VIP accommodations and should be addressed through another rulemaking activity.*
comment	*A6*
	page Nr:51 Paragraph : , AMC to appendix S25.10b) “Interior Doors on Commercially Operated Aeroplanes” Comment : May the term "doors" on commercially operated Aeroplanes imply that more doors are allowed ?
response	*Accepted.* *The need to clarify has been acknowledged. The final text has been reworded and it should now be clear that indeed, more than one door might be allowed.*
comment	*A7*
	page No: 53 Paragraph : AMC to Appendix S, S25.10(c) ii)C "...there is no seat and no stowage in the compartment " Comment: This is not understood as parameter to define an "occupied compartment"
response	*Accepted.* *See the response to comment 118.*
comment	*A8*
	page Nr: 55 Paragraph : AMC to appendix S, S25.10d) e) Comment : Although its appreciated that a guidance has been developed our concern is that it is (too) complex and difficult to understand .
response	*Noted.* *It is acknowledged that the AMC text is complex, because the matter itself is quite complex, and this is why figures have been added for clarification. Some typographical errors were spotted in the text, and have now been corrected, which might also bring more clarity to the text.*

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Attachments to comments

Running man.pdf
Attachment #1 to comment #199

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