COMMENT RESPONSE DOCUMENT (CRD) TO NOTICE OF PROPOSED AMENDMENT (NPA) 2008-18

"Access through bulkheads"

Explanatory Note

I. General

1. The purpose of the Notice of Proposed Amendment (NPA) 2008-18, dated 13 June 2008 was to consult stakeholders on the outcome of the rulemaking activity related to the rulemaking task 25.045 “Access through Bulkheads”. The task originally envisaged amending Certification Specifications for Large Aeroplanes (CS-25) adopted by Executive Director’s Decision N° 2003/2/RM of 17 October 2003, as amended by Executive Director’s Decision N° 2007/020/R of 20 December 2007 (CS-25 Amdt 4)[1]. However, supported by the results of the Regulatory Impact Assessment the Notice of Proposed Amendment (NPA) 2008-18 proposed termination of further rulemaking activity related to the 25.045 without an amendment to CS-25.

II. Consultation

2. The draft Executive Director Decision for not amending Decision N° 2003/02/RM was published on the web site (http://www.easa.europa.eu) on 13 June 2008.

   By the closing date of 13 September 2008, the European Aviation Safety Agency ("the Agency") had received 9 comments from 7 National Aviation Authorities, professional organisations and private companies.

III. Publication of the CRD

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

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

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

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

6. Such reactions should be received by the Agency not later than 14 December 2008 and should be submitted using the Comment-Response Tool at http://hub.easa.europa.eu/crt.

[1] Note that in the meantime CS-25 was last amended by ED Decision 2008/006/R of 29/08/2008 (CS-25 Amdt 5)

IV. Results of the consultation

7. The feedback from the NPA 2008-18 consultation was limited as far as its volume is concerned (9 comments from 7 commenters only). Nevertheless, some recognised Aviation Authorities (LBA, UK CAA, FAA, Austrian Ministry of Transport, Innovation and Technology), two relevant operators associations (AEA, IACA) and a voluntary group of aviation safety professionals (Air Safety Group) did provide their opinion.

8. The results of the consultation show clearly prevailing support to the rulemaking group's choice of the preferred option in the RIA ("Do nothing") and to their recommendation not to continue with further rulemaking activity on this subject. This support was expressed both by operators' associations and all the Aviation Authorities which responded. The fact that a relatively small number of comments was submitted to this NPA can also be interpreted the way that its subject (access through bulkheads) and the proposed course of EASA action have not raised major safety concerns among stakeholders.

9. The only commenter who expressed disagreement with the proposed course of action was the Air Safety Group (see comment No. 7 on page 6 below). The commenter provided a number of arguments in their comment in support to their position. The Agency reviewed these arguments carefully and provides below a detailed response explaining why the Agency does not share the commenter's position.

10. Taking all the comments into consideration the Agency does not see a reason to change its intent not to continue with further rulemaking and to terminate this rulemaking task without an amendment to CS-25.

V. CRD table of comments, responses and resulting text

(General Comments)	-

comment	*6* comment by: *AIR SAFETY GROUP* The Air Safety Group (ASG) welcomes this Notice and commends EASA for addressing the issues involved and the differences of opinion expressed, particularly those put forward during the FAA/JAA Cabin Safety Harmonisation process. This allows our response to be brief and in turn address only a limited number of these issues which we ask EASA to consider before finalising its opinion in relation to section CS 25.815.
response	*Noted*

comment	*8* comment by: *AEA* AEA would like to stress its support the work performed by the rulemaking task 25.045, as well as share the opinion delivered by this group. AEA commented extensively to the JAA ANPA, and to the Cranfield University study, and we commented that due to the nature of the specific set-up on which the study was based, we could not support the proposed generic applicability in the ANPA without further substantiation; the substantiation by engineering judgement could not be accepted for a wide applicability, in the absence of other possible methods like tests, analysis, or service experience (other accidents). We are happy to see that further accident analysis has been conducted in order to determine the safety benefits of the proposed rule, and to soundly substantiate the potential need for the rulemaking activity. AEA is glad to see that harmonization with other authorities has been sought, when the JAA ANPA was published we already expressed our concern regarding the consequences of the lack of harmonization (with FAA, Transport Canada, etc.) because the rule would have posed an unjustified financial threat to the European airlines and would put them at a disadvantage when compared to US and other Airlines. While we agree that on a survivable accident, rapid evacuation of the aircraft is paramount to the continued survival of the occupants in fire related accidents, the safety benefits introduced by the proposed rule, would be minimal an at a significant cost, therefore we support the conclusion that available data does not support the case for regulatory action, as, since the Manchester accident, significant enhancements have been made by the fire-reducing regulations (reducing the fire threat to occupants and improving evacuation capability) and the proposed increase in aisle width would lead to a reduced seating capacity/stowage room capacity with an high economic impact. Therefore AEA shares the conclusion that the Option 1 (do nothing: not proceed with the regulatory actions proposed by the JAA ANPA) is the best option and to conclude the rulemaking activity 25.045, as this option would not have any significant adverse effect on occupant safety.
response	*Noted*

comment	*9* comment by: *FAA* The FAA agrees with the proposed EASA action.
response	*Noted*

comment	*10* comment by: *Walter Gessky* The conclusion, not to continue with further rulemaking activities is supported by the Austrian Ministry of Transport, Innovation and Technology.
response	*Noted*

A. Explanatory Note - I. General p. 3

comment	*4* comment by: *Luftfahrt-Bundesamt* The LBA supports the conclusion of the EASA Rulemaking Group: "... that the Agency should not produce a rule and terminate the rulemaking task 25.045."
response	*Noted*

A. Explanatory Note - V. RIA - 13. Purpose and Intended Effect - b. Scale of the issue - 2. Experimental Trials Results p. 9-10

comment	*5* comment by: *UK CAA* **Paragraph:** Para 12 (b) (2) 'Experimental Trial Results' **Page No:** 9 **Comment:** At the bottom of page 9 it states that 'incentive payments were used to simulate competitive behaviour'. Although these words may have been taken from other documents, they are misleading. **Justification:** The payments were used to induce competitive behaviour. At no time was there, or should there have been, any claim that this method was used to simulate behaviour. Unfortunately the word simulate has been used before to imply simulation of behaviour in an accident. This of course is quite wrong. The competitive behaviour induced in the trials was intended to include just one aspect of the actions of the occupants which made it more representative of real behaviour than that displayed in previous testing and emergency evacuation exercises. **Proposed Text:** 'Incentive payments were used to induce competitive behaviour'
response	*Accepted*

It is accepted that the words "to induce competitive behaviour" may better reflect the purpose of the incentive payments. It is understood that these payments themselves cannot guarantee full "simulation" of all aspects of competitive behaviour in conditions of a real accident.

Please note that the proposed amendment, despite acceptable, will not be implemented because the RIA is not going to be re-published.

B. RECOMMENDATION OF THE PREFERRED OPTION p. 17

comment *3* comment by: *IACA International Air Carrier Association*

IACA agrees with the conclusion and recommendation of the rulemaking group for EASA to discontinue further rulemaking activity and terminate the 25.045 rulemaking task.

response *Noted*

comment *7* comment by: *AIR SAFETY GROUP*

EASA findings

The conclusion of the NPA is as follows: *'The Agency should not continue with further rulemaking activity and terminate the 25.045 rulemaking task'*, in other words no action should be taken. This conclusion would appear to have been reached, despite consideration of the 1985 Manchester B737 accident report and other recommendations, largely because it is considered that *'there is only an insignificant safety benefit to be gained by increasing the aisle width ...'*.
In reaching this conclusion the Agency would appear to have been strongly influenced by the findings of one report (reference 4 of the NPA)) that *'Although restricted aisle width at monuments was cited as an impediment to evacuation in the accident to the Boeing 737 in Manchester, England, in 1985, a review of 86 other accident reports and 10 reports addressing occupant survival issues did not reveal any other accidents where this was considered an issue'.*

Furthermore replies from accident investigation authorities other than the AAIB are used to support this view.

The Air Safety Group comments

It is believed that two points are not in dispute:

(i) The findings of the AAIB following the Manchester B737 accident.

(ii) The findings of the CAA sponsored research at Cranfield.

Thus it is agreed that at Manchester there were considerable delays to the evacuation due to passengers getting jammed in the narrow gap in the forward bulkhead and that Cranfield research showed that such delays were to be expected unless the gap was at least 30 inches wide.

The study by Schaefers (Reference 1) provides evidence that in a large majority of relevant accidents the rear doors, as at Manchester, are not available so that most of the passengers have had to use the forward doors and thus first have to pass through the forward bulkhead.

It would seem that the only matter of dispute is the number of cases where delays have occurred due to the inadequate width of the forward bulkhead gap.

Survivable accidents

Without a complete reappraisal of all relevant accidents it is impossible to assess the likely benefits of having a wider gap. However an assessment of such accidents shortly after the one at Manchester found that, rather than being exceptional, Manchester was, in terms of outcome, typical of many accidents that had gone before. This would suggest, and one cannot put it any stronger than this, that many of the circumstances were also similar. It should be noted that the investigation of the Manchester accident was hailed by international investigators as being a milestone in the investigation of the survival and evacuation aspects of an accident. This was because up until then the vast majority of investigations had paid little, if any regard to these aspects, despite the requirement to do so in the ICAO Manual of Aircraft Accident Investigation. Since 1985 there has probably been some improvement in this but, it is suggested, not sufficient for anyone to be able to derive much useful information.

The questions put to investigators quoted in the NPA appear to ignore this, which diminishes the value and relevance of the replies quoted. If the investigation authorities had been asked whether they had investigated any relevant accidents it is probable that many would have replied that they had not. Furthermore of those who had done so it is probable that the majority would have had to admit that they had not spent much time on survival and evacuation matters. Thus if they had all been asked if they had found evidence that a narrow bulkhead gap had caused no significant delays, there would probably have been very few, if any, positive answers; the majority just would not know. Consequently this evidence cannot be taken at face value and is better ignored.

During the Cranfield trials, and again during the FAA trials, the many different groups of ‘passengers' contained those who pushed, climbed over seats, and generally tried to evacuate as if their lives depended upon this, while there were others who sat back and waited. This diverse behaviour was totally consistent with the pattern of survivors and fatalities found at Manchester, with some well away from an exit surviving and others close to a useable exit dieing. Moreover survivors of the Manchester accident who witnessed some of the Cranfield trials confirmed that their own experience and observations of the actual evacuation were just like that simulated, giving further weight to the relevance of the results obtained. Indeed it would be extremely surprising if the behaviour of passengers in other real emergencies differed in any significant way from these.

The ASG believes that EASA should rely on the evidence from the Manchester report, the Cranfield trials and the Schaefers study. In addition it is worth considering the requirements laid down in Building Regulations since these have been in use for many years and have been developed following a great deal of experience with evacuations from clubs, theatres, cinemas, office

blocks, shops, etc. Although it has not been possible to compare regulations throughout Europe and elsewhere it is probable that in this respect the 1988 UK regulations are still typical. These stated that for a single file of people the appropriate width was 500 to 600 mm (19.7 to 23.6 inches), for 50 people to evacuate the minimum doorway width (and that of gaps leading to the doors) should be 800 mm (31.5 inches) and for 110 people it should be 900 mm (35.4 inches). It has been unequivocally established that under aircraft emergency evacuation conditions people will not stay in a single file but will attempt to squeeze through any available gap, side by side if this appears possible. This supports and reinforces the concept laid down in the above Building Regulations. It seems to the ASG totally inappropriate that aircraft evacuation requirements should not be at least as good as those for buildings.

Other Improvements to Fire and Evacuation Regulations

While the improvements listed under this heading in the NPA will undoubtedly be of some benefit, particularly in the event of an in-flight fire, these should not be exaggerated in the case of a ground or post-impact fire. It must be remembered that no comparable improvements have been made to passenger baggage in the hold, nor to carry on baggage, including plastic bags containing items purchased at the airport, nor to surplus clothing, newspapers etc ever present in the cabin. In the circumstances relevant to an emergency evacuation with fire penetrating the cabin the flammability and propensity to produce toxic fumes of these items will totally outweigh the improvements made to aircraft cabin materials.

Enhanced fuselage burn-through protection will certainly help in the zero impact conditions experienced at Manchester but will be of little benefit in the large proportion of survivable accidents where the fuselage suffers one or two cracks or breaks (often produced just fore and/or aft of the wings and the very strong centre section).

Economic

It is agreed that any change will have some economic impact on Operators. If, however, rather than just considering total annual costs, one also notes the number of passengers carried per year then it can be seen that the additional cost per ticket is trivial and is not even worthy of consideration.

Recommendation

Now that there are signs of a reduction in the number of totally catastrophic, non-survivable CFIT accidents it is becoming even more important that we continue attempts to improve the survivability of comparatively low speed landing and take-off accidents. The ASG suggests that this can only be achieved by nibbling away at problems wherever they have appeared, there being no single solution to this problem. It is within this context that the ASG strongly recommends that the minimum width of gaps through bulkheads should immediately be increased from 20 inches and be set at 30 inches. However it should be noted that the trials establishing this minimum dimension were conducted some 20 years ago and in the intervening years the average size and average weight of passengers have both increased considerably. The ASG therefore suggests that increasing the minimum gap width to 30 inches should be an interim step pending the results of a new series of trials using a selection of people typical of today's passengers.

References

In addition to the papers referenced in the NPA the following is highly relevant.

1. Schaefers, F, 'Passenger emergency exit usage in actual emergencies of jet airliners 1960 - 1989', CAA European Cabin Safety Conference, (1990).

response

Not accepted

ASG invites the Agency to reconsider the option preferred by the group and strongly recommends increasing the minimum width of gap through bulkheads from 20 to 30 inches (Option 4 of the EASA RIA). ASG advises that the Agency should rely on the evidence available from the three information sources as follows:

1. The findings of the AAIB following the Manchester B737 accident
2. The findings of the CAA sponsored research at Cranfield
3. The Schaefers study from 1990

It should be noted that a detailed review of information from the first two sources was part of the EASA rulemaking task. The Terms of Reference requested the group to revisit all the information on which JAA ANPA 25D-224 was based, namely the evidence from the Manchester accident and the Cranfield research. The rulemaking group has performed this review thoroughly which is also reflected in the RIA that is part of the NPA. The group has not put these findings in question and the Agency concurs with the group that they remain relevant for the Manchester accident and any potential accident with a similar scenario. The Cranfield results are also not questioned in principle and a certain potential for a safety benefit from a wider access through bulkheads identified by the Canfield study is recognised.

The groups' choice of the preferred option and the recommendation to the Agency not to adopt the new requirements for the minimum width of the aisle through bulkheads is a consequence of their conclusion that "only insignificant safety would be introduced with new airworthiness requirements". This is based on a qualified judgment of the group that the Manchester accident scenario, in respect to the jamming of passengers between bulkheads, is unlikely to be repeated in the future and therefore it is unlikely that the safety benefit potential identified by the Cranfield study will be significantly utilized.

The above judgment is based on an analysis of in-service accident data from before and after Manchester. This thorough data search has revealed an absolute lack of any evidence in support of a safety case. Another justification supporting the judgement is that the configuration of the aircraft involved in the Manchester accident is not representative of modern aircraft with improved type design due to introduction of significant improvements to fire and evacuation standards. It should be noted that the commenter's position is not correct in that respect, and that all aircraft material flammability improvements referenced in the NPA (seat fire blocking material, reduced heat release & smoke emissions, enhanced fuselage burnthrough) are mainly introduced to improve the evacuation capability in post-crash fire scenarios. Further, the two additional referenced rule changes (Escape Path Marking, improved access to Type III exits) also address improvements for emergency evacuations in general.

The commenter suggests that "this evidence cannot be taken at face value and is better to be ignored". This view is not shared by the Agency. The

Manchester accident is indeed considered a milestone in investigation of a survivable accident and of the related evacuation aspects. The Manchester accident highlighted the issue of access through bulkheads as a potential impediment to evacuation. Since then Airworthiness and Accident Investigation Authorities are on alert. The Agency is confident that accident investigations after Manchester were capable of identifying whether there were major impediments to evacuation and if access through bulkheads was an issue. It is unlikely that the access through bulkheads, if it really was a major safety problem, would have never surfaced in any accident after Manchester and remained hidden to the experts of responsible Airworthiness and Accident Investigation Authorities.

The above assumption leads the Agency to the opinion that the Manchester accident was indeed in the aspect of access through bulkheads exceptional rather then typical. It means that the probability of another case with access through bulkheads being again an impediment to evacuation is estimated to be low. This would make utilisation of the safety benefits expected to be brought by the new requirements insignificant so that they would not outweigh the expected cost.

The Agency has also reviewed, as recommended by the commenter, the "Schaefers study" as it was considered a new source of information not considered by the group. However no substantially new information relevant to the aspect of access through bulkheads was found there to change the view of the Agency. The study indeed mentions a number of impediments to evacuations identified in 114 relevant accidents from 1960 to 1989: delay in exit opening, exit jamming, crowding at the exit, delay in mounting the slide etc. The internal obstructions were found typically formed by spilled galley contents or luggage. No mention of access through bulkheads was found.

The UK Building Regulations recommended to be taken into consideration in addition were not reviewed because the Agency believes that aircraft environment is specific and very different from the environment in buildings. Therefore it considers that these findings cannot be easily applied to aircraft.

To conclude, considering the information currently available and also taking into account the other comments on this NPA both from Industry and Authorities, the Agency intends to follow the recommendation by the group not to continue with this rulemaking activity and to terminate this task.

comment *8* ❖ comment by: *AEA*

AEA would like to stress its support the work performed by the rulemaking task 25.045, as well as share the opinion delivered by this group.
AEA commented extensively to the JAA ANPA, and to the Cranfield University study, and we commented that due to the nature of the specific set-up on which the study was based, we could not support the proposed generic applicability in the ANPA without further substantiation; the substantiation by engineering judgement could not be accepted for a wide applicability, in the absence of other possible methods like tests, analysis, or service experience (other accidents).
We are happy to see that further accident analysis has been conducted in order to determine the safety benefits of the proposed rule, and to soundly substantiate the potential need for the rulemaking activity.
AEA is glad to see that harmonization with other authorities has been sought,

	when the JAA ANPA was published we already expressed our concern regarding the consequences of the lack of harmonization (with FAA, Transport Canada, etc.) because the rule would have posed an unjustified financial threat to the European airlines and would put them at a disadvantage when compared to US and other Airlines. While we agree that on a survivable accident, rapid evacuation of the aircraft is paramount to the continued survival of the occupants in fire related accidents, the safety benefits introduced by the proposed rule, would be minimal an at a significant cost, therefore we support the conclusion that available data does not support the case for regulatory action, as, since the Manchester accident, significant enhancements have been made by the fire-reducing regulations (reducing the fire threat to occupants and improving evacuation capability) and the proposed increase in aisle width would lead to a reduced seating capacity/stowage room capacity with an high economic impact. Therefore AEA shares the conclusion that the Option 1 (do nothing: not proceed with the regulatory actions proposed by the JAA ANPA) is the best option and to conclude the rulemaking activity 25.045, as this option would not have any significant adverse effect on occupant safety.
response	*Noted*