

**Comment Response Document (CRD)
to Notice of Proposed Amendment (NPA) 02/2006**

**for amending the Executive Director Decision N° 2003/2/RM of 17 October 2003 on
certification specifications, including airworthiness codes and acceptable means of
compliance for airworthiness of large aeroplanes
(« CS-25 »)**

Doors and Mechanical Systems

Explanatory Note

I. General

1. The purpose of the Notice of Proposed Amendment (NPA) 02/2006, published on 10 March 2006 was to propose an amendment to Decision N° 2003/2/RM of the Executive Director of the Agency of 17 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance for airworthiness of large aeroplanes (« CS-25 »).

II. Consultation

2. By the closing date of 21 April 2006, the European Aviation Safety Agency (the Agency) had received 46 comments from 9 National Aviation Authorities, professional organisations and private companies.

III. Publication of the CRD

3. All comments received have been acknowledged and incorporated into a Comment Response Document (CRD). This CRD contains a list of all persons and/or organisations that have provided comments and the answers 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:
 1. **Accepted** – The comment is agreed by the Agency and any proposed amendment is wholly transferred to the revised text.
 2. **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.
 3. **Noted** – The comment is acknowledged by the Agency but no change to the existing text is considered necessary.
 4. **Not Accepted** - The comment is not shared by the Agency.

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

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 12 December 2007 and should be sent by the following link: CRD@easa.europa.eu.

IV. CRD table of comments, responses and resulting text

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
1.	JAA NPA 25DF-316 Proposals 25.1439(a)	FAA	<p>Current text: "In addition, portable protective breathing equipment must be installed for the use of appropriate crewmembers for fighting fires in compartment accessible in flight. This includes isolated..."</p> <p>Proposed text: "In addition, portable protective breathing equipment must be installed for the use of appropriate crewmembers for fighting fires in compartment accessible in flight other than the flight deck. This includes isolated..."</p> <p>Justification: Adding the additional text as indicated above clarifies that the last sentence of proposed § 25.1439(a), which requires protective breathing equipment (PBE) for the maximum number of occupants, does NOT apply to the flight deck. The FAA has previously interpreted this part of the rule as not applying to the flight deck. However, if taken literally, the proposed requirement could apply to the flightdeck, thus requiring up to four PBE's on the flight deck; this is not the intent of the rule.</p> <p>This proposed change is based on a comment submitted by Boeing to FAA Docket No. FAA-2002-13438 and was accepted by the FAA in the final rule amendment no 25-115. The FAA concurred that the first sentence of § 25.1439(a) covers the flight deck and the last sentence covers other compartments and not the flight deck. The FAA revised the rule as requested by the commenter.</p> <p>To maintain harmonization between the CS and FAR's it is recommended that the Agency revise CS 25.1439(a) in accordance with the proposed text.</p>	Accepted	<p>CS 25.1439 Protective breathing equipment</p> <p>(a) Fixed (stationary, or built in) protective breathing equipment must be installed for the use of the flight crew, and at least one portable protective breathing equipment shall be located at or near the flight deck for use by a flight crew member. In addition, portable protective breathing equipment must be installed for the use of appropriate crew members for fighting fires in compartments accessible in flight other than the flight deck. This includes isolated compartments and upper and lower lobe galleys, in which crew member occupancy is permitted during flight. Equipment must be installed for the maximum number of crew members expected to be in the area during any operation.</p> <p>...</p>
2.	JAA NPA 25DF-316	FAA	<p>25.1439(b)(5) Current text: "If a continuous flow</p>	Accepted	CS 25.1439 Protective breathing equipment

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	Proposals 25.1439(b)(5)		<p>protective breathing system is used (including a closed circuit re-breather type system) a flow rate of..."</p> <p>Proposed text: "...If a continuous flow open circuit protective breathing system is used (including a closed circuit re-breather type system) a flow rate of"</p> <p>Justification: Historically, a larger supply of oxygen was considered necessary when an open circuit continuous flow oxygen mask was used, relative to a demand oxygen mask, because the continuous flow mask has no means to adjust for a momentary inhalation rate that exceeded the continuous flow rate. Accordingly the continuous flow rate was set higher, so that the flow would be sufficient in the event of a momentary excursion.</p> <p>By contrast, in a closed circuit re-breather system, in principle, the rate at which oxygen must be supplied is not equal to the breather rate. If the closed circuit device has sufficient reservoir capacity to accommodate the demand for added breathing volume during a momentary excursion, the actual oxygen flow rate required is only the quantity necessary to replace the oxygen that was consumed by metabolic activity or lost through leakage. The current language could be interpreted as requiring a closed circuit portable PBE to have an oxygen supply much larger than actually is necessary.</p> <p>This proposed change is based on a comment submitted by B/E Aerospace to FAA Docket No. FAA-2002-13438. B/E Aerospace also noted that to the best of their knowledge, none of the currently certificated TSO C116 compliant portable closed circuit PBE units would be capable of delivering 600 liters of oxygen, but all would readily accommodate a breathing</p>		<p>(a) ... (b) ... (1) ... (5) The equipment ...and minute volume. If a continuous flow open circuit protective breathing system is used a flow rate ofat ambient pressure, dry. (6) ...</p>

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			<p>rate of 30 liters per minute BTPD at 8,000 ft pressure altitude. In the final rule amendment 25-115 the FAA concurred that the portion of the rule that specifies 600 liters of oxygen at 70°, and 760 mm Hg is only applicable to continuous flow open circuit protective breathing systems.</p> <p>To maintain harmonization between the CS and FARs it is recommended that THE AGENCY revise CS 25.1439(b)(5) in accordance with the proposed text.</p>		
3.	JAA NPA 25DF-316 Proposals 25.1439(a)	FAA	<p>25.1439(a) Current text: "This includes isolated compartments, upper and lower lobe galleys, in which crew member occupancy..."</p> <p>Change to: "This includes isolated compartments and upper and lower lobe galleys, in which crew member occupancy..."</p> <p>Justification: Rationale for the change: editorial/grammar</p> <p>To maintain harmonization between the CS and FAR's it is recommended that THE AGENCY revise CS 25.1439(a) in accordance with the proposed text.</p>	Accepted	(See proposed text in response to Comment 1)
4.	JAA NPA 25DF-316 Proposals 25.1453	FAA	<p>Justification: Concur with the proposed revision to CS 25.1453 Protection of oxygen equipment from rupture.</p>	Noted	N/A
5.	JAA NPA 25DF-316 Proposals 25.729	FAA	<p>25.729 I concur.</p>	Noted	N/A
6.	JAA NPA 25DF-316 Proposals 25.773(b)(3)(ii)	FAA	<p>"(ii) Provides the view specified in (b)(1), and "</p> <p>Justification: Specifying (b)(1) removes the ambiguity from the words "that paragraph"</p>	<p>Accepted</p> <p>Also small editorial change.</p>	<p>CS 25.773 Pilot compartment view ... (b) ... (3) The first pilot must have a window that:</p>

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					(i) is openable under the conditions prescribed in sub-paragraph (b)(1) of this paragraph when the cabin is not pressurised, (ii) provides the view specified in (b)(1), and (iii) ... (4) ...
7.	JAA NPA 25DF-316: Proposals AMC 25.773	FAA	<p>AMC 25.773 Pilot compartment view The FAA Advisory Circular AC 25-773-1: Pilot Compartment View Design Considerations (January 8, 1993) is accepted by the THE AGENCY as providing acceptable means of compliance with CS 25.773.</p> <p>Proposed text: a. "The FAA Advisory Circular AC 25.773-1..." b The THE AGENCY should develop appropriate guidance material for showing compliance with CS 25.773(b)(4)(ii).</p> <p>Justification: a. Correction to AC reference b. The proposed text of 25.773(b)(4)(ii) states that the openable window specified in sub-paragraph (b)(3) of this paragraph need not be provided if it is shown that an area of the transparent surface will remain clear sufficient for at least one pilot to land the aeroplane safely in the event of "An encounter with severe <u>hail, birds or insects</u>." This requirement is not harmonized with the associated requirement in 14 CFR 25.773(b)(2)(ii), which requires consideration of "probable damage due to a severe <u>hail</u> encounter." AC 25.773-1 provides no guidance regarding how to determine compliance for the conditions of severe hail, bird or insect encounters. In most previous FAA certifications where applicants chose to show compliance by means other than an openable window, the method of compliance for severe hail encounters was</p>	<p>a. Accepted</p> <p>b. Noted</p> <p>This requirement was already in the CS (without the word "severe") and was introduced in its predecessor JAR-25 by Change 13 on 5 October 1989. No guidance material was available. Design solutions proposed by applicants will be assessed at project level. If this concerns validation exercises the Agency agrees to discuss compliance determinations with the FAA. If guidance material appears necessary the Agency will consider starting a new rulemaking task.</p>	<p>AMC 25.773 Pilot compartment view</p> <p>The FAA Advisory Circular AC 25.773-1: Pilot Compartment View Design Considerations (January 8, 1993), is accepted by the Agency as providing acceptable means of compliance with CS 25.773.</p>

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			<p>to assume that the front windshield would be completely unusable. In recent certifications, some designs have employed wider "wrap around" front windows and applicants have attempted to show that only part of the window would be affected by the hail encounter, using available hail impact resistance testing methods.</p> <p>This "partial obscuration" approach for glass windows is a technically controversial method of compliance and the FAA would appreciate the opportunity to work with the THE AGENCY to develop harmonized guidance for severe hail encounters in those cases where applicants want to show that only part of the front windshield will be affected.</p> <p>There are available bird impact resistance testing methods, but they are used to determine bird impact resistance and do not directly address visibility through the windshield after a severe bird encounter.</p> <p>Finally, there are no established compliance methods associated with usability of an area of the windshield after a severe insect encounter.</p>		
8.	<p>JAA NPA 25DF-316 Proposals CS 25.773(b)(1)(i)</p>	FAA	<p>CS 25.773(b)(1)(i) "Heavy rain at speeds up to 1.5 VSR1, with lift and drag devices retracted; and"</p> <p>Proposed text: "Conditions from light misting precipitation to heavy rain at speeds from fully stopped up to 1.5 VSR1, with lift and drag devices retracted; and"</p> <p>Justification: The requirement that the means to maintain a clear area of forward vision must function at high speeds and precipitation rates is based on the use of windshield wipers. The effectiveness of windshield wipers normally degrades as airspeed and precipitation rates increase.</p>	<p>Not Accepted</p> <p>The text of CS 25.773(b)(1)(i) has not been amended and does not form part of this proposal.</p> <p>There is currently no EASA rulemaking tasks planned to address this issue. However, EASA may consider future rulemaking as part of a harmonisation activity.</p>	N/A

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			<p>It has been assumed that because high speeds and precipitation rates represent the limiting conditions for windshield wipers, the wipers will also be effective at lower speeds and precipitation rates. Systems which maintain a clear area by blowing air over the windshields are similar in this respect.</p> <p>Recently, applicants have sought approval of designs which use new methods (e.g. hydrophobic coatings) in lieu of windshield wipers. Hydrophobic coatings are most effective when in the presence of significant airflow and large droplet sizes, so the conditions called out in the current requirements do not necessarily represent the limiting conditions for this new technology. Rather, the limiting cases for hydrophobic coating are typically at low or zero airspeed and with very small droplet sizes. Accordingly, the FAA has issued special conditions to account for this difference on recent programs utilizing hydrophobic coatings in lieu of windshield wipers. The suggested change to the text is consistent with those special conditions. The FAA anticipates that it will make a similar change to 14 CFR 25.773 in the future.</p>		
9.	JAA NPA 25DF-316 Proposals AMC 25.851(b)	FAA	<p>AMC 25.851(b) Current text on page 59 of 91, sub-part f, "...FAA Transport Airplane Directorate (TAD) is proposing a revision to FAR 25.855 and 25.857 which would require Class B cargo compartments to be sufficiently small ...".</p> <p>Proposed text: "...FAA is proposing a revision to FAR 25.855 and 25.857 which would require Class B cargo compartments to be sufficiently small ...".</p> <p>Justification: Typically, in documents released we</p>	Accepted	<p>AMC 25.851(b) Built-in Fire Extinguishers ... 5. COMPARTMENT CLASSIFICATION ... Classification of Class F cargo compartments. f. A Class F cargo compartment ... of cargo. To address new "combi" designs, the FAA is proposing a revision to FAR 25.855 and 25.857 which would require ... compartment. 6. ...</p>

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			identify ourselves as the FAA without including the division, directorate or group with in the agency.		
10.	JAA NPA 25DF-316 Proposals AMC 25.851(b)	FAA	AMC 25.851(b) Current text on page 66 of 91, Section 11, 1st paragraph, "... The EPA is allowing the aviation industry to use Halon to demonstrate system functionality ...". Proposed text: "...The US Environmental Protection Agency is allowing the aviation industry to use Halon to demonstrate..." Justification: Typically, in documents released we avoid abbreviations unless we have previously provided the full designation somewhere in the document and/or sub-section.	Partially Accepted Acronym is defined in Section 9. However, "US" is added to aid clarification. In addition, reference to the applicable EC regulation is given.	AMC 25.851(b) Built-in Fire Extinguishers ... 9. EVALUATION OF ALTERNATE GASEOUS EXTINGUISHING/ SUPPRESSION SYSTEMS AND ALTERNATE AGENTS The Montreal Protocol, ... in the future. The US Environmental Protection Agency (EPA) ... in determining compliance with airworthiness standards. A European Regulation (footnote) governing substances that deplete the ozone layer has also been published and contains provisions that allow exemptions for critical uses of Halon, including fire extinguishing in aviation. It should be noted that the EPA/EU exemption is predicated on the basis that ... replacement extinguishing agent or system has been found then the EPA/EU will remove the exemption. <i>Footnote</i> REGULATION (EC) No 2037/2000 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 June 2000 on substances that deplete the ozone layer ... 11. USE OF SIMULANTS FOR CERTIFICATION TESTING The aviation industry ...level of safety. The EPA/EU is allowing the aviation industry ... demonstrating compliance. ... (See revised text in the Appendix to this CRD)
11.	JAA NPA 25D-301 Proposals	FAA	The requirement to prevent latch movement until the door is closed is not part of the FAR. This proposal was added following the harmonization activity and	Partially Accepted The Agency agrees that there may be some limited cases where an	

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	25.783(d)(8)		<p>was not part of the FAA notice of proposed rulemaking. The FAA considers this provision philosophically in keeping with the remainder of § 25.783, but not strictly necessary. For many doors, it will be obvious that they are open, should the latches be moved to the latched position, prior to the door being closed. In those cases, preventing the latches from moving until the door is closed will add no safety benefit. For doors that are not obviously open, e.g., large cargo doors operated remotely, a feature to prevent movement of the latches may be necessary to satisfy the existing requirements. This is discussed in FAA Advisory Circular 25.783-1A, paragraph 12. Therefore, while this requirement will be a difference between the FAR and the CS, the practical effect may not be significant.</p> <p>Justification: Not applicable.</p>	<p>open door is obvious and normal flight crew/cabin crew procedures would reliably detect such a condition. CS 25.783 (d)(8) and its associated AMC have therefore been amended accordingly to limit its applicability.</p> <p>However, the Agency does not agree that proposed CS 25.783 (d)(8) is not strictly necessary. Whilst it is possible to determine from inspection, in good lighting conditions, whether most doors are open or closed, the integrity of the security of a door should not rely on a single human evaluation (plus a single indicating sensor) as this will not provide the level of integrity commensurate with the hazard.</p>	
12.	<p>JAA NPA 25D-301</p> <p>Proposals</p> <p>AMC paragraph 3.n.</p>	FAA	<p>"Locked" is a new definition that could potentially lead to interpretation differences. The FAA advisory circular definition of "locked" is that the locks are fully engaged. The proposed CS-AMC definition adds the phrase, "...and held in position by lock operating mechanism".</p> <p>Justification: Whereas the rules specifically call out a securing feature in the latch operating mechanism, there is no explicit call out for same in the lock operating mechanism. While it is implicit that the locks must hold a position so as to prevent disengagement of the latches, it is possible that they can fulfill this function prior to their complete movement. If this is a stable position of the mechanism, all requirements are met and the door is safe, the door would be 'locked'. Depending on the interpretation the proposed definition may or may not permit the same determination.</p>	<p>Not Accepted</p> <p>The position of the lock is not indicative of the position of the locking mechanism. Such mechanisms frequently incorporate over-centre features which result in the lock being in the same position when the operating mechanism is slightly under-centre as it is when it is over-centre. If only the position of the lock is monitored/indicated, a door with an unsecured lock may not result in an unsafe door alert.</p> <p>Door security is dependent upon all functions being completed and should be required for indication of a secure door. The FAA text and interpretation could lead to a door design that does not meet the intended level of integrity.</p> <p>The proposed definition will add</p>	N/A

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13.	JAA NPA 25D-301 Proposals 25.807	FAA	<p>Since the requirements of §25.807 are very specific as to the types of exits permitted on airplanes of various passenger capacities, we did not feel it was necessary to specify exit types when discussing entry doors. Therefore, Amendment 25-114 to the FAR, only requires that such doors qualify as an emergency exit, but does not limit this to Type II and larger. However, our expectation is that, in practice, this will almost always be the case.</p> <p>Justification: Not Applicable.</p>	<p>clarity, is consistent with the definition of "latched" and will avoid incorrect interpretation.</p> <p>Noted</p> <p>New CS 25.807(k) was an existing requirement in CS 25.783(h) and simply relocated in this proposal.</p>	N/A
14.	General Comment(s) Entire Document	UK CAA	<p>The CAA-UK strongly supports the proposals contained within this NPA. Identical material has been used widely on recent and current certification projects, and it is considered to be the state-of-the-art and best practice in the field of airworthiness.</p> <p>Justification: Agreement</p>	Noted	N/A
15.	JAA NPA 25D-301 Explanatory Note Paragraph 1 (Summary) (Page 6 of 91)	UK CAA	<p>Part of the second sentence (line 3) currently reads "...however the rulemaking activities under the JAA system where not stopped...". "Where" should be replaced by "were".</p> <p>Justification: Editorial</p>	Noted	N/A (The text of the explanatory note is not reproduced in the final publication).
16.	JAA NPA 25D-301 Proposals Book 1, CS 25.783 (d) (8)	UK CAA	<p>Book 1, CS 25.783 (d) (8) (Page 10 of 91) This sub-paragraph is an excellent addition to earlier JAA text. Without this specific requirement it would be possible to certify a door design that gives a latched and locked indication on the flight deck but with the door still open. Such a deficiency would be deemed to be an unsafe condition. This requirement text is</p>	<p>Noted</p> <p>(See also comments 27 & 46 and the revised text in the Appendix to this CRD)</p>	N/A

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17.	JAA NPA 25D-301 Proposals 25.783 (e)(3) & AMC (Pages 11 and 25 of 91)	UK CAA	essential to preclude an unsafe design from being certified. Justification: Agreement	Partially Accepted "Improbable" is replaced directly with "remote" as this represents the maximum acceptable probability of failure.	CS 25.783 Fuselage Doors ... (e) <i>Warning, caution, and advisory indications.</i> (1) ... (2) ... (3) There must be ... erroneous closed, latched, and locked indication is remote for: (i)
18.	JAA NPA 25D-301 Proposals AMC 25.783. 3. Definition of Terms (h) (Page 15 of 91)	UK CAA	The definition of a door that has 'initial inward opening movement' is essential because alleviations from certain requirements are permitted for such doors. Therefore the safety advantages that may be inherent in such designs must be realised in practice, thus a definition is essential. However, it has been found during application of the objective definition that it may be unnecessarily demanding for those aircraft that have pressurisation systems that are designed to cope with fuselages of large volume. Whilst it is recommended that the existing definition is retained it is also recommended that the following alternative means of satisfying the safety objective is included. 'Those designs that are unable to maintain the cabin pressure to 0.035 kg/cm ² , (0.5 psi) before moving outward relative to the pressure plane, must have means to ensure that the inward movement of the door is not less than 3 degrees relative to the nominal pressure plane and this inward movement is maintained for a distance of not less than 20 mm.'	Partially Accepted The Agency agrees that the definition proposed in the NPA requires further development. No justification is provided by the commenter as to how its alternative definition has been derived. Revised definitions have been developed by the Agency and are included in the Appendix to this CRD. (See also responses to Comments 28 & 33)	(See revised text in the Appendix to this CRD)

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19.	JAA NPA 25D-301 Proposals AMC CS 25.783(c) Pressurisation prevention means, (c)(1) (a) (Page 20 of 91)	UK CAA	<p>4th sentence currently reads "... pressure kept below 0.035 kg/cm² (1/2 psi)". First, if kg/cm² and psi are to be retained, the fraction (1/2) should be replaced by (0.5) as no other occurrences of fractions occur in the text. Second, as pressure is being referred to in this instance, should not the official S.I. unit of pressure (Pascal) be used?</p> <p>Justification: Clarification</p>	<p>Accepted</p> <p>The use of SI Units is made consistent throughout the proposal.</p>	<p>CS 25.783 Fuselage Doors</p> <p>...</p> <p>(h) ... (1) Doors in ...subject to a pressure greater than 3.447 kPa (0.5 psi). Opening by persons ...</p> <p>AMC 25.783 FUSELAGE DOORS</p> <p>...</p> <p>3. DEFINITIONS OF TERMS</p> <p>...</p> <p>h. "Initial inward opening movement".</p> <p>i) sufficient rigidity ...with a pressure of at least 13.8 kPa (2 psi) applied to the door.</p> <p>ii) sufficient range ... cabin pressurisation greater than 3.447 kPa (0.5 psi) cannot be maintained.</p> <p>iii) ...</p> <p>(CS 25.783(b) Opening by persons)</p> <p>...</p> <p>(a) For doors in <u>pressurised compartments</u>: it should ... differential pressure is above 13.8 kPa (2 psi). The ...</p> <p>(CS 25.783(c) Pressurisation prevention means)</p> <p>...</p> <p>(a) <u>The provisions for preventing pressurisation</u> must ... considered to be prevented when the pressure is kept below 3.447 kPa (0.5 psi).- These systems are ... is initiated.</p> <p>...</p>
20.	JAA NPA 25D-301 Proposals AMC 25.783(f) (a)(1) (Page 26 of 91)	UK CAA	<p>The visual indication should permit determination of the closed, latched and locked condition of the door with a greater degree of reliability than the indication system that it is being used to over-ride. Therefore the visual means should permit determination of the status of the locks, as does the flight deck indication. Viewing</p>	<p>Accepted</p> <p>Additional changes added to clarify intent. It is the position of the mechanism securing the locks that must be verified by direct viewing to check the status of the flight deck indication. It is the part providing the</p>	<p>AMC 25.783 FUSELAGE DOORS</p> <p>...</p> <p>(CS 25.783(f) Visual inspection provision)</p> <p>....</p> <p>(a) The provisions should:</p> <p>1) allow direct viewing of the position</p>

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			<p>the position of the locks (locking elements) is inadequate for this purpose and the locked condition, i.e. it must be possible to assess visually, both the position of the lock and the restraining means such that the locked condition of the door may be determined. This then accords with the requirement that it should be possible 'to determine without ambiguity that the door is closed, latched and locked.' '- - each lock is in the locked position' should be changed to '- - each lock is locked'.</p> <p>Justification: Clarification</p>	flight deck indication that needs to be verified by direct viewing.	<p>of the locking mechanism to show, without ambiguity, whether or not each latch is latched and each lock is locked. For ...</p> <p>...</p>
21.	<p>JAA NPA 25D-301</p> <p>Original JAA NPA proposals justification</p> <p>Note at top of Page 29 of 91</p>	UK CAA	<p>Note currently reads "Where relevant references to JAA and JAR have been replaced by THE AGENCY and CS respectively". For clarity the sentence needs a comma and could read "Where relevant, [comma] references to JAA and ..." OR "References to JAA and JAR have been replaced by THE AGENCY and CS respectively, where relevant".</p> <p>Justification: Clarity</p>	Noted	N/A
22.	<p>JAA NPA 25DF-316</p> <p>Proposals</p> <p>Appendix 1 – Analytical Methods for Determining Halon 1301 Concentration Levels, Paragraph 2 (Page 71 of 91)</p>	UK CAA	<p>In Table 2-1 "Terms and Symbols", the word "meter" is used frequently. In European use, this dimension is spelt "metre". The US spelling is however, "meter".</p> <p>Justification: Consistency</p>	Accepted	(Prior to publication, "meter" will be replaced with "metre" throughout the text).
23.	<p>JAA NPA 25D-316</p> <p>Proposals</p> <p>AMC 25.729 Book 2, AMC-</p>	Boeing	<p>AMC 25.729 Book 2, AMC-Subpart D Paragraph 7. Introduce a new AMC 25.729 to read: Paragraph 4.(c) [on page 55 of 91] states:</p>	Not Accepted The principles of CS 25.1322 are valid irrespective of the type of indication.	N/A

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	Subpart D Paragraph 7		<p>c. <i>Retracting mechanism Indication.</i> (Reference CS 25.729(e) Position indicator and warning device)</p> <p>(1) When light indicators are used, they should be arranged so that-</p> <p>(i) A green light for each unit is illuminated only when the unit is secured in the correct landing position.</p> <p>(ii) A warning light consistent with CS 25.1322 is illuminated at all times except when the landing gear and its doors are secured in the landing or retracted position.</p> <p>Proposed text: AMC 25.729 addresses warning <u>lights</u> (indicators) and the color of these <u>lights</u> should be consistent with 25.1322, but it does not address "<u>displays</u>." It should be clear that the red warning per 25.1322 is applicable when actual <u>lights</u> are used to indicate gear and door position, as on the Boeing Models 737 and 717. The use of "<u>displays</u>" -- as on the Models 747-400, 767-400ER, 777 and 787, where EICAS messages such as "Config Gear" and "Gear Disagree" are provided in red and amber colors -- negates this requirement.</p> <p>Justification: JAA previously approved airplane models (i.e., Boeing Models 767-400ER, 777) that use displays rather than indicator lights, where the color of the display was not in accordance with 25.1322. Additional EICAS messages such as "Config Gear" and "Gear Disagree" are provided in the red and amber convention defined in CS 25.1322.</p>	<p>Note: CS 25.1322 and AC/AMC 25-11 are currently subject to a rulemaking activity, and will be updated to address other warning indications, including aural alerts and those integral with displays.</p>	
24.	JAA NPA 25D-301 Proposals AMC 25.783	Boeing	The wording of Section 6 (Structural Requirements) in the NPA was changed from Revision 1 to Revision 2. Boeing does not agree with this change. Review of JAA NPA Comment-Response Document	Not Accepted The wording from Rev.1 has been simplified to clarify the need for a structural assessment under CS	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
	Section 6 (Structural Requirements)		<p>for NPA 25D-301, Issue Sept. 2001, Fuselage Doors, makes it clear that this change was based on the view that the material contained in the NPA would only be applied to future designs and major modifications that, by virtue of their application date, would be required to meet the latest amendment of the certification standards. This view is not valid for all situations. The appropriate controlling process is EC 1702/2003 21A.101 (and its advisory material), which permits exceptions per a defined process. Under that process, it is possible for compliance with 25.783 to be at the level defined by the NPA and for compliance with 25.571 to be at an earlier amendment level.</p> <p>Justification: This situation has already arisen. Our belief is that THE AGENCY's intent with Section 6 is not to define unique rulemaking for doors, but instead to emphasize the applicability of CS 25.571. Our recommendation is that this intent is better served by returning to the original wording of Rev. 1.</p>	25.571 for new aircraft. Certification to an older standard may be permitted, but is a procedural issue and is therefore addressed under 21A.101.	
25.	JAA NPA 25D-301 Explanatory Note Explanatory Note, Paragraph B.I.1. - SUMMARY	Boeing	Boeing does not support the changes made to NPA 25D-301 in Final Version 2/January 2003. We support Issue 1, September 2001 and the harmonized FAA regulation that became Amendment 25-114. As a member of the ARAC General Structures Harmonization Group – Doors Sub-team, we expended considerable resources to assist in the development of harmonized requirements and advisory material. The changes made at Final Version 2/January 2003 are not harmonized and will preclude the benefits that the harmonization process was to achieve. It should be noted for reference that prior to the harmonization process, although there were differences in interpretation, there were no technical	<p>Not Accepted</p> <p>The Agency is obliged to consider the technical merits of every comment that it receives and to respond accordingly. It would undermine this process if harmonisation considerations were to unduly limit the scope of this technical assessment.</p> <p>Changes from the agreed harmonised position introduced into this NPA, were the result of European experience of applying the original proposals and are aimed at overcoming significant limitations identified in the original draft, which</p>	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>differences in the wording of the FAA and JAA requirements.</p> <p>Justification: The NPA, as proposed, does not fulfil the last of the four primary objectives identified in the last paragraph of the Summary. The proposed requirements and language of NPA 25D-301 at Issue 1 were common with the recently released FAA requirements; however, the changes made at Final Version 2/January 2003 create some significant differences with the FAA requirements. In fact, the changes introduced at Final Version 2 January 2003 were submitted to the FAA during the public comment period for the associated FAA NPRM, and after due consideration, the FAA did not adopt the changes, with the exception of a few editorial suggestions.</p>	could lead to unsafe conditions.	
26.	JAA NPA 25D-301 Explanatory Note B.I.2. INTRODUCTION	Boeing	<p>a. The discussion in the last paragraph on page 7 states, "In the intervening time since the JAA NPA, these specific proposals have been applied on a voluntary basis for several JAA certification/validation programmes..." As stated, we find this may be misleading.</p> <p>b. The further discussion in the same paragraph that states, "...due to different time frames...it was not possible to harmonize the final text prior to publication of FAA Amendment 25-114," we find to be inaccurate.</p> <p>c. The last sentence in the same paragraph that states, "The requirements and AMC contained in this NPA do not conflict with the rules published by the FAA or AC 25.783-1A," has recently been proven to be incorrect.</p> <p>Justification: a. We are aware that several manufacturers, including The Boeing</p>	<p>a) Noted The intent of Issue 2 has been met by most manufacturers, even if the relevant CRIs formally identify Issue 1. (e.g. Airbus A380, Embraer 170/190, Dassault Falcon 7X, B737-900, etc.)</p> <p>b) Not Accepted (See response to Comment 11)</p> <p>c) Not Accepted All the numerous door designs that fully comply with NPA 25.301 Issue 2 have been certificated or validated by the FAA without modification.</p> <p>While this proposal introduces changes from the harmonised position and to FAA rules, the practical impact of these changes are</p>	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>Company, have volunteered to comply with the harmonized requirements of NPA25D-301 at Issue 1, but are unaware of any such voluntary compliance to Final Version 2/January 2003.</p> <p>b. The members of the ARAC working group had several e-mail exchanges and teleconferences discussing the JAA proposed changes. The technical changes were rejected by several members representing industry and the FAA. This was not a time constraint issue, but rather a technical disagreement, as the proposed changes were determined by several members to not improve safety, to be overly restrictive, and costly to implement. It is also important to note that the majority of the proposed changes were received as comments to the parallel FAA Notice of Proposed Rulemaking (NPRM) (Ref. Docket Number FAA-2003-14193) and that these comments were rejected by the FAA in their adoption of 14 CFR §25.783, Amdt 25-114.</p> <p>c. In an ongoing THE AGENCY validation program, it has been determined that significant design changes would be required to comply with NPA 25D-301 at Final Version 2/January 2003, compared to the parallel FAA requirements and advisory material.</p>	<p>not considered to be significant, and this is acknowledged by the FAA (See comment 11). For new designs, compliance with the proposed requirements can be readily achieved without significant weight or cost impact. For doors designed to earlier requirements and applied to new aircraft, the new design objectives can often be achieved through a relatively simple re-design.</p>	
27.	<p>JAA NPA 25D-301 Proposals BOOK 1: SUBPART D - DESIGN AND CONSTRUCTION CS 25.783, Fuselage Doors CS 25.783(d)(8)</p>	Boeing	<p>This requirement, introduced at Final Version 2/January 2003, is overly restrictive and not required to achieve the safety objectives. We suggest that the requirement CS 25.783 (d)(8) be deleted.</p> <p>Justification: Boeing agrees with the FAA's determination that, depending on the door design, there are instances where such a provision is not necessary. The THE AGENCY justification for this requirement considers that the indication system could</p>	<p>Partially Accepted (See response to Comment 11)</p>	(See revised text in the Appendix to this CRD)

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>signal that the door is closed, latched, and locked if the latches are rotated to the latched position when the door is not closed. This concern is already adequately addressed by the requirements in CS 25.783(e)(1) through (e)(3), which require multiple, more stringent indications than set forth in the existing JAA requirements.</p>		
28.	<p>JAA NPA 25D-301 Proposals BOOK 2: ACCEPTABLE MEANS OF COMPLIANCE AMC 25.783 FUSELAGE DOORS 3. DEFINITIONS OF TERMS h. "Initial inward opening movement"</p>	Boeing	<p>The proposed definition of "initial inward opening movement" is arbitrary; is not based on a hazard determination, which is the basis of the entire revision to CS 25.783; is overly restrictive; does not consider the safety benefits that inward opening doors should possess; and may not achieve the relevant safety objectives. The definitions of "Initial opening movement" and "Inward" adequately define "Initial inward opening movement" such that the additional definition is not warranted. We suggest that the definition of "initial inward opening movement" be deleted.</p> <p>Justification: Arbitrarily limiting the force at which the guide features must perform their function to 2 psi does not address the safety concern. Guide features should be designed to perform their function at whatever pressure a specific aircraft and door design could achieve with the door and the operating mechanism in all positions where the guide is supposed to be effective.</p> <p>Defining the range of motion where the guide features are to be effective by maintaining a closing component due to pressurization loads does not necessarily relate to the safety benefit provided by initially inward opening doors. The requirements of CS 25.783(c) ensure that pressurization to an unsafe level is prevented if the door is not fully closed,</p>	<p>Partially Accepted</p> <p>The Agency agrees that the definition proposed in the NPA requires further development.</p> <p>Revised definitions have been developed by the Agency and are stipulated in the Appendix to this CRD.</p> <p>(See also responses to Comments 18 & 33)</p>	(See revised text in the Appendix to this CRD)

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>latched and locked. It should, therefore, clearly not be possible to pressurize the airplane to any significant amount if the door is open, as it must not be latched and locked if it is not fully closed. With this consideration, the definition as written would not require any range where the guidance would need to be effective.</p> <p>It is recognized that the regulations allow designs that incorporate automatic control of the cabin pressurization system as the means to prevent pressurization, which include means to override the system such that, with simple crew action, the airplane can be pressurized with a door not fully closed, latched, and locked. It is our understanding that this is the reason that the guidance range is defined in terms of pressurization. With such designs, we agree the guidance means should be effective in controlling the door position until unsafe pressurization is prevented, including the case where the pressurization prevention means has been overridden by the crew. However, such a definition does not apply equitably to designs that incorporate pressurization prevention means that cannot be overridden by crew actions.</p> <p>Further, the proposed definition would preclude a door that is fully inward opening, yet does not provide a hole of sufficient size to prevent pressurization to less than 0.5 psi, to be considered initially inward opening.</p>		
29.	JAA NPA 25D-301 Proposals BOOK 2 – ACCEPTABLE MEANS OF COMPLIANCE AMC 25.783	Boeing	The proposed definition of "locked" is not consistent with that defined by the ARAC working group, nor the FAA. It was not an oversight by the ARAC working group that the definition of "latched" includes the latches being restrained while the definition of "locked" did not. The harmonized definition of "locked" was chosen to meet all safety objectives while	Not Accepted Monitoring the position of the lock element does not provide an indication, either of the security of the lock or the completion of the movement of the locking mechanism.	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
	FUSELAGE DOORS 3. DEFINITIONS OF TERMS n. "Locked"		<p>not requiring undue complication to existing, proven, simple lock and vent door concepts that are employed on a significant number of airplanes and have been proven in years of service to satisfy all relevant safety objectives. We suggest that the definition of "locked" be the same as that agreed to by the ARAC working group and adopted in the FAA advisory material: "Locked means the locks are engaged."</p> <p>Justification: It is recognized that the lock operating mechanism needs to hold the locking elements in their final locked position. However, for designs that incorporate vent doors, the lock restraint does not necessarily need to be engaged before the vent doors are closed if the vent doors will not remain closed unless the restraint force is applied to the locking mechanism. In such designs unless there is a restraining force on the lock mechanism the vent door will be open, providing a visual indication that the door is not locked and achieving the safety objective of not being able to pressurize unless the locks are engaged. Furthermore, when the act of pressurization provides an additional securing means for the locks, then it must be acceptable to initiate pressurization before the full restraint of the locking mechanism is achieved.</p> <p>This consideration is addressed in CS 25.783(d)(3)(iii), which considers the benefit that can be achieved by designs that take advantage of pressurization forces, while the proposed definition of "locked" ignores this potential. The proposed definition of "locked" in the NPA complicates the design of lock mechanisms and pressure prevention means without providing a commensurate improvement in safety.</p>	<p>Door designs that use pressurisation prevention means to secure the lock do not comply with the principle safety advantages of this proposal, in that each function should be completed prior to the start of the next function. The Boeing proposal was not compliant with the original (pre-ARAC) requirements that stated that pressurisation should not be initiated prior to the doors being locked. Such a requirement precludes vent panels as a means of compliance as pressure must be initiated in order for air to flow past the vent panel. Pressurisation forces should not be a means to secure the locks as such forces are not present to any appreciable extent during initial climb and final descent and of course during approved non-pressurised flight. In addition, should negative pressure be experienced on the door it is common for this type of design to cause the locks to be back-driven thus unlocking the door. This is unacceptable.</p>	

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
30.	JAA NPA 25D-301 Proposals BOOK 2 – ACCEPTABLE MEANS OF COMPLIANCE AMC 25.783 FUSELAGE DOORS 5. DISCUSSION OF THE CURRENT REQUIREMENTS CS 25.783(b)	Boeing	<p>The proposal omits the advisory material contained in the FAA Advisory Circular (AC) 25.783-1A section 9(b)(3), which states:</p> <p><i>"The opening of exits on the ground should also be considered in the design, relative to the effects of differential pressure. While it is desirable and required to be able to open exits under normal residual differential pressure, opening of the exit with significant differential pressure can be a hazard to the person opening the exit. Clearly, emergency conditions may dictate that the exit be opened regardless of the differential pressure. Devices that restrict opening of the door, or affect the pressurization system, can have failure modes that create other safety concerns. However, the manufacturer should consider this issue in the design of the door and provide warnings where necessary, if it is possible to open a door under differential pressure that may be hazardous to the exit operator. Ideally, the door would be openable with the highest differential pressure that is safe for the operator, but no higher than that."</i></p> <p>We request that the advisory material contained in the FAA AC 25.783-1A section 9(b)(3) for FAR 25.783(b) as shown above, be included in the AMC.</p> <p>Justification: The omission of the identified text is contradictory to the National Transportation Safety Board (NTSB) Safety Recommendation A-02-020; causes the THE AGENCY AMC and the FAA AC to be different; and does not address past recommended corrective action, such as that identified in the FAA's Special Airworthiness Information Bulletin (SAIB) NM-05-68, dated July 8, 2005. That SAIB recommends:</p>	<p>Partially Accepted</p> <p>This text did not form part of the ARAC proposals. Notwithstanding this, the EASA accepts most of the text as providing additional guidance to manufacturers which is in keeping with the safety intent. However, the FAA AC goes much further than the SAIB recommendation that placards or indications be provided, by suggesting doors should be 'prevented' from opening in the event of significant differential pressure. The EASA does not concur, as compliance with the AC is likely to result in doors that could prevent opening in an emergency situation. The last sentence of the FAA AC is therefore not reproduced in the EASA AMC.</p>	<p>AMC 25.783 FUSELAGE DOORS ... <i>(CS 25.783(b) Opening by persons</i> ... (c) ...</p> <p>The opening of exits on the ground should also be considered in the design, relative to the effects of differential pressure. While it is desirable and required to be able to open exits under normal residual differential pressure, opening of the exit with significant differential pressure can be a hazard to the person opening the exit. Clearly, emergency conditions may dictate that the exit be opened regardless of the differential pressure. Devices that restrict opening of the door, or affect the pressurization system, can have failure modes that create other safety concerns. However, the manufacturer should consider this issue in the design of the door and provide warnings where necessary, if it is possible to open a door under differential pressure that may be hazardous to the exit operator.</p>

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p><i>"We agree with NTSB and recommend that you implement a means to notify persons that doors or exits on the identified airplanes can be opened with significant differential pressure and that in the event you feel resistance in opening the door, you should proceed with caution. For example, you may elect to install placards or indication systems near or on the affected exits."</i></p>		
31.	<p>JAA NPA 25D-301: Proposals BOOK 2 – ACCEPTABLE MEANS OF COMPLIANCE AMC 25.783 FUSELAGE DOORS 5. DISCUSSION OF THE CURRENT REQUIREMENTS CS 25.783(e)(2)</p>	Boeing	<p>The final sentence of paragraph CS 25.783(e)(2) states that it is preferred to use the same sensors for the indications at the door operator station and the flight deck. This is not consistent with FAA recommendations and is not necessarily a benefit.</p> <p>In addition, the proposed advisory material states, "In the case of an indicator light, it should not be less reliable than the visual means in the cockpit as required per CS 25.783(e)(3)."</p> <p>The proposed advisory material also omits the advisory material contained in the FAA AC 25.783-1A, paragraph 12.b.(3), which states:</p> <p><i>"For doors that are remotely operated, the design of the door itself may need to address this requirement. For example, the position of the door may be difficult to ascertain from the operator' station such that it is not obvious whether the door is in the closed position, or just close to it. In this case, it will likely be necessary to provide a feature either that prevents closing of the door if the latches are in the latched position, or prevents the latches from being moved unless the door is in the closed position. For doors that are manually operated, or where the position of the door is obviously not closed (e.g., held open by the latches in their latched</i></p>	<p>Partially Accepted</p> <p>Door security is not achieved by having independent and by definition potentially conflicting indications at the door operator's station and the flight deck. However, the wording is amended to change the sense of the text from a recommendation to an acceptable means of compliance, thus avoiding the implication that use of the same sensors is the recommended option.</p> <p>FAA AC 25.783-1A, paragraph 12.b.(3) has similar intent to CS 25.783(d)(8).</p>	<p>AMC 25.783</p> <p>CS 25.783(e)(2)... A single indication ...per CS 25.783(e)(3). The same sensors could be used for both indications in order to prevent any discrepancy between the indications.</p>

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p><i>position), such provisions would not be necessary to satisfy the requirement. For example, a passenger door with "shoot bolts" that extend to prevent the door from being closed any significant amount would typically not need such features to satisfy the requirement."</i></p> <p>We suggest that the last two sentences of the proposed advisory material for CS 25.783(e)(2) be deleted and replaced by the advisory material from the FAA AC 25.783-1A, paragraph 12(b)(3), for FAR 25.783(e)(2) shown above.</p> <p>Justification: Utilizing different sensors for the two indications can provide redundancy and may significantly decrease the probability of erroneous indication that the door is closed, latched, and locked. Although the use of redundant sensors could increase the probability of erroneous "not fully closed," "not fully latched," or "not fully locked indication," depending on the details of the indication system, it can often be used to eliminate passive failures.</p> <p>The proposed rule requires that erroneous visual indication of closed, latched, and locked in the flight deck to be improbable. While a reliable indication system on the control panel is desirable, requiring the reliability to be as good as or better than that in the flight deck may result in added complexity and cost and is of limited benefit when redundancy is achieved by the use of separate indication systems between the control panel and flight deck.</p>		
32.	JAA NPA 25D-301 Original JAA NPA proposals justification	Boeing	The Economic Impact Evaluation Assessment from NPA 25D-301 at Issue 1 is not valid or appropriate for Final Version 2/January 2003. Contrary to the first sentence, the proposal will impose significant costs on manufacturers without	Not Accepted The NPA is only applicable to new designs and it has been found that compliant designs are not necessarily complex or involve	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
	B. III. ECONOMIC IMPACT EVALUATION ASSESSMENT		<p>the potential for cost savings by avoiding duplicative testing and reporting as described.</p> <p>The NPA, as proposed, does not fulfil the last of the four primary objectives identified in the Summary. The proposed requirements and language of NPA 25D-301 at Issue 1 were common with the recently released FAA requirements; however, the changes made at Final Version 2/January 2003 create some significant differences with the FAA requirements.</p> <p>We suggest that several substantive changes made between NPA 25D-301 at Issue 1 and Final Version 2 January 2003 not be incorporated into the final THE AGENCY rule as described in detail on individual comment forms. If the proposed changes are to be incorporated by THE AGENCY, then we recommend that a thorough and proper Economic Impact Evaluation Assessment be conducted and publicly documented.</p> <p>Justification: PROPOSAL 4: The qualitative cost assessment in the original JAA NPA proposal justification is invalid if the revised definition of "locked" is incorporated. According to the Part II - Discussion, Proposal 4 <i>"is not intended to impose a new level of reliability for mechanical vent systems that is more stringent than that established by typical fail-safe designs."</i> However, the proposed definition change is more stringent than existing interpretations of the regulations and will add significant cost and weight to typical mechanical vent systems.</p> <p>PROPOSAL 5: The proposed definitions of "locked" and of "initial inward opening movement" are contrary to the statement, <i>"The vast</i></p>	<p>additional costs. The commenter appears to be referring to the costs involved in modifying a non compliant door to meet the current requirements.</p> <p>Differences between EASA/FAA rules are considered not to be significant (See Comment 11) and further changes made to the EASA rules as a result of comments received will reduce differences even further.</p> <p>Cost benefits have already been achieved by companies that have complied with NPA 25-301 Issue 2 (January 2003) as the door designs have been accepted without modification by the FAA.</p>	

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p><i>majority of aeroplanes already comply..."</i> Both of these revised definitions would require significant, complex design changes and associated cost impacts to door designs on the majority of airplanes (including those that have been or are being certificated to the regulations in NPA 25D-301 at Issue 1, September 2001) without a definitive improvement in safety.</p> <p>Summary of Benefit and Cost Considerations: The final expectation that the proposed rule would provide cost savings by avoiding duplicative testing and reporting will not be achieved if the changes proposed at Final Version 2/January 2003 are approved. The changes made at Final Version 2/January 2003 create several significant differences with the FAA requirements, so that the expectations will not be achieved.</p>		
33.	JAA NPA 25D-301 Proposals (Page 15 of 91) AMC 25.783	Latecoere	<p>3. DEFINITIONS OF TERMS h. "Initial inward opening movement". In order for a door design to be classified as having an inward initial opening movement, the provisions provided to guide the door inward must have: [....] ii) sufficient range to maintain the closing component from the pressurisation load until the loss of cabin air past the partially open door is such that cabin pressurisation greater than 0.035 kg/cm² (0.5 psi) cannot be maintained. [....]</p> <p>Proposed text: LATECOERE understands that AMC 25.783 § 3.h.ii purpose is to find criteria and values to determine if an initial opening movement is inward. LATECOERE understanding of AMC 25.783 § 3.h.ii is: The height of the (guide ramps) guiding</p>	<p>Partially Accepted</p> <p>The Agency agrees that the definition proposed in the NPA requires further development.</p> <p>Revised definitions have been developed by the Agency and are included in the Appendix to this CRD.</p> <p>(See also responses to Comments 18 & 28)</p>	(See revised text in the Appendix to this CRD)

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>slope inducing inward movement must be sufficient to clear an open area between door and surround. We remark that the surface of this area is the same than the vent panel (pressure is also 0.5 psi).</p> <p>LATECOERE proposes (or/and) - Either to change the 0.5 psi level, in order to require a smaller clear open area and to add a reasonable lift movement maximum value (for instance 2") - Or to verify the inward opening movement during the design review.</p> <p>Justification: LATECOERE finds : • This requirement is different from FAA requirements (FAR 25.783 & corresponding AC) • This requirement creates a link between 2 items which have now no link - Cabin Pressure - initial inward opening movement for doors. • This requirement will add such constraints to inward opening plug type doors that their interest for forecoming programs could decrease.</p> <p>According the A/C fuselage volume, especially twin aisle, LATECOERE finds following impacts • "huge" guiding ramps • large lifting course • difficulties to keep reasonable handle loads with a long lift movement, especially in case of emergency exit after a minor crash • important technical and cost impacts on seals and cover plate (...)</p>		
34.	JAA NPA 25D-301 Proposals (Page 15 of 91)	Latecoere	3. DEFINITIONS OF TERMS n. Locked" means the locks are engaged and held in position by the lock operating mechanism.	Not Accepted Whilst the objective may be achieved by an additional sensor, other designs achieve the objective of	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
	AMC 25.783 FUSELAGE DOORS		<p>Proposed text: LATECOERE understanding of AMC 25.783 § 3.n is: To monitor a closed door, an additional sensor (on the lock drive/restrain mechanism) could be found necessary.</p> <p>LATECOERE proposes - to clarify the need of sensors, for instance adding a sentence in AMC, § 25.783(e) (Warning, caution and advisory indications), in which it will be stated that the monitoring of the locks themselves is sufficient to demonstrate compliance...</p> <p>Justification: LATECOERE finds: This requirement is different from FAA requirements (FAR 25.783 & corresponding AC).</p>	monitoring the movement of the locking system by existing sensors.	
35.	N/A	austrocontrol	This NPA is fully supported by Austro Control.	Noted	N/A
36.	AA NPA 25D-301: Proposals CS25.783 (a)(6)	DGAC France	<p>CS25.783 (a)(6) shall be removed.</p> <p>Justification: This paragraph is not a requirement but rather guidance material reminding other parts of the requirement.</p>	<p>Not Accepted</p> <p>Sub-paragraph CS 25.783 (a)(6) stipulates the need to comply with other related rules and provides a link to avoid any oversight in the showing of compliance, in a similar way to sub-paragraph (a)(5). The rule is retained as its presence is considered to add a small benefit and is harmonised with the associated FAR.</p>	N/A
37.	JAA NPA 25D-301 Proposals CS25.807 (k) (page 12/91)	DGAC France	<p>(k) Each passenger entry door in the side of the fuselage must qualify as a Type A, Type I, or Type II passenger emergency exit and must meet the requirements of CS 25.807 to CS 25.813 that apply to that type of emergency exit.</p> <p>Justification: To specify here that that type X emergency doors must meet CS25.xxx</p>	Accepted	<p>CS 25.807 Emergency exits</p> <p>...</p> <p>(k) Each passenger entry door in the side of the fuselage must qualify as a Type A, Type I, or Type II passenger emergency exit.</p> <p>...</p>

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
38.	JAA NPA 25DF-316 Proposals §4- CS25.1439 (b) (5) (page 51/91) §10- AMC25.1439 (b) (5) (page 73/91)	DGAC France	<p>requirements is useless. If a door qualifies as a specific type emergency exit, it means it meets the applicable requirements.</p> <p><u>Revise CS25.1439 b 5 as follows:</u></p> <p>(5) The dispensing equipment must supply protective oxygen of 15 minutes duration ... the local ambient atmosphere. (See AMC 25.1439(b)(5))</p> <p>Keep and amend AMC 25.1439 (b) (5) in order to read with the sentence copied from NPA proposal (4) wording:</p> <p>If a demand oxygen system is used, a supply of 300 litres of free oxygen at 21°C (70°F) and 760 mm Hg pressure is considered to be of 15-minute duration at the prescribed altitude and minute volume. If a continuous flow protective breathing system is used (including a closed circuit re-breather type system) a flow rate of 60 litres per minute at 2438 m (8000 ft) (45 litres per minute at sea level) and a supply of 600 litres of free oxygen at 21°C (70°F) and 204 kPa (760 mm Hg) pressure is considered to be of 15-minute duration at the prescribed altitude and minute volume. Continuous flow systems must not increase the ambient oxygen content of the local atmosphere above that of demand systems. BTPD refers to body temperature conditions, that is 37°C (99°F), at ambient pressure, dry.</p> <p>Justification: a) About proposal (4) : The added text "IF a demand oxygen system... at ambient pressure, dry" is more worded as a means to comply to the requirement that asks for a 15 min oxygen supply that is already in the paragraph.</p>	<p>Not Accepted</p> <p>The term "equipment" is considered to be sufficiently generic and avoids the need to introduce other terms which may add to the potential for misinterpretation.</p> <p>The word "dispensing" was removed in the NPA although, due to an editorial oversight, was not highlighted as deleted text in the NPA.</p> <p>AMC 25.1439(b)(5) is deleted under these proposals.</p>	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>Those proposed added sentences are built as "If a system XX is used, a supply of "such and such" is considered to be of 15 minutes duration. Such wording should be at AMC level. That wording was already there in a similar format and should be clarified at AMC level. The CS is not to define all "if" implementing cases of a rule.</p> <p>Word "dispensing" seems to have disappeared from the beginning of current applicable text and is not either proposed as strikethrough word. THE AGENCY shall clarify.</p> <p>b) Proposal (10) on page 73/91 is not to be done. AMC shall be kept and modified to read as proposed (copy the text from the CS paragraph proposed in the NPA).</p>		
39.	<p>JAA NPA 25DF-316</p> <p>Proposals</p> <p>proposal 5: cs 25.1453 (page 51/91)</p>	DGAC France	<p>Add a requirement to state that parts in the cargo zone shall be protected from accidental damage.</p> <p>Justification: In the added paragraph (c) the agency wishes to add the protection of parts from accidental damage. Recent experience on large aircraft would tend to add such a requirement for the cargo zone where loading may damage parts and lead to a leak of oxygen.</p>	<p>Not Accepted</p> <p>This proposal was outside the scope of the ToR for this task.</p> <p>Any proposal to enhance the design standard should be submitted to the Agency as a proposal for future rulemaking together with supporting justification.</p>	N/A
40.	<p>JAA NPA 25DF-316</p> <p>Proposals</p> <p>proposal 9: AMC 25.851 (b) (page 56/91)</p>	DGAC France	<p>The AMC should be clarified for its inconsistencies.</p> <p>Justification: Although some parts of this proposed AMC is more of a guidance level, some of its paragraph could be requirements such as its paragraph 13 or 14 where new requirements could be written at CS level. Paragraph 7 seems to be more the "heart" of this AMC. On the other end in its paragraph (5), it is mentioned of class F cargo compartment. This is not in line</p>	<p>Not Accepted</p> <p>Paragraphs 13 & 14 could also be construed as providing acceptable means of compliance with other rules (e.g. CS 25.1557, CS 25.1581 and CS 25.1585). The text is added here to highlight possible issues to consider in certificating a built-in fire extinguishing system, and is considered to be appropriate.</p> <p>The text of paragraph 5 makes it</p>	N/A

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>with the CS where no such class exists. It's coming from the FAA side.</p> <p>DGAC France has no objection to create an AMC, but it should be checked for consistency and simplified to its minimum necessary before to be published.</p>	<p>clear that this "is a proposed new cargo compartment" and is added for information. An Agency rulemaking task (25.041) has been started with the aim of introducing a Class F.</p>	
41.	<p>JAA NPA 25DF-316</p> <p>Proposals</p> <p>§ 4 - Revised CS 25.1439</p>	<p>Dassault Aviation</p>	<p>Comment on revised CS 25.1439(a):</p> <p>The proposed text would require at least two portable breathing equipments (PBE): one PBE "for use by a flight crew member", one PBE "for the use of appropriate crew members".</p> <p>Aboard an aeroplane with an approved seating configuration of 19 or less, where no cabin crew member is required (see JAR-OPS 1.990) and two pilots are required, only one PBE should be required.</p> <p>Justification: In the case above mentioned, we cannot find any substantiation for having two PBE on board.</p>	<p>Not Accepted</p> <p>If cabin crew members are not required by operational rules, then there are no other "appropriate crew members" and the need for a second PBE is not established.</p>	<p>N/A</p>
42.	<p>JAA NPA 25DF-316</p> <p>Proposals</p> <p>§ 1 - Revised CS 25.729 Retracting Mechanism</p>	<p>Dassault Aviation</p>	<p>Comment on revised CS 25.729:</p> <p>References to the current AMC 25.729(e) and AMC 25.729(f) will have to be deleted when the deletion of these AMCs is adopted.</p>	<p>Accepted</p>	<p>CS 25.729 Retracting mechanism</p> <p>...</p> <p>(e) Position indicator and warning device (See AMC 25.729 (e)-) If a retractable landing gear ...</p> <p>(f) Protection of equipment on landing gear and in wheel wells. Equipment that is ... from the damaging effects of –</p> <p>(1) A bursting tyre, (see AMC 25.729 (f));</p> <p>(2) ...</p> <p>(3) Possible wheel brake temperatures (see AMC 25.729 (f)).</p>
43.	<p>JAA NPA 25D-301</p> <p>Proposals</p> <p>25.729 (e)</p>	<p>Bombardier Aerospace</p>	<p>Page 74: "In addition the CS requires that the indicator also provide similar position information about the associate landing gear doors."</p>	<p>Not Accepted</p> <p>Page 74 simply refers to the original JAA justification and will not form part of the proposed rule change.</p>	<p>N/A</p>

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>We propose modifying the text to reduce misinterpretation – as we are concerned that this interpretation may be a bit severe.</p> <p>Justification: Landing gear doors mechanically linked to the landing gear itself do not typically require position indication because their position is known from the position of the landing gear. Failure modes of the mechanisms supporting the doors that may result in inadvertent door opening are currently addressed through failure and hazard analysis per 25.1309. Doors that act independently from the gear itself with their own actuation and locking mechanisms typically have indications that advise of an inadvertent opening of the door. These independent doors would be expected to comply with the lock and indication requirements of 25.729.</p>	<p>While the rule (CS 25.729(e)) stipulates that the landing gear position indicator should also indicate that associated doors are secured in the extended or retracted position, no guidance material is provided on this issue. The interpretation stipulated by the commenter, would be one acceptable to the Agency.</p>	
44.	JAA NPA 25D-301 Proposals 25.783 (b)	Bombardier Aerospace	<p>What has been missed is that Type III Removable Emergency Exit hatches could be interpreted to either require a flight lock or not require a flight lock. We propose this be clarified by adding the following (proposed changes in bold italicized):</p> <p>25.783(b) ...in addition, <i>for each door that could be a hazard</i>, design precautions must be taken to minimize the possibility for a person to open <i>the</i> door intentionally during flight...</p> <p>OR</p> <p>making a specific reference in the AMC to the requirements for flight locks at Type III exits.</p> <p>Justification: Existing 25.783(h) defines six criteria to meet in order to state that a door is not a hazard. The existing 25.783(g) goes on to state that Removable Emergency Exit</p>	Accepted	<p>CS 25.783 Fuselage Doors</p> <p>...</p> <p>(b) <i>Opening by persons.</i> There must be a means to safeguard each door against opening during flight due to inadvertent action by persons. In addition, for each door that could be a hazard, design precautions must be taken to minimise the possibility for a person to open the door intentionally during flight. If ...</p>

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>Hatches need not comply to 25.783 (c) and 25.783(f). The problem is that Removable Emergency Exit Hatches (Type III) could be interpreted as hazardous or non-hazardous. The hatch is not a hazard because it opens to inside the fuselage, but could become a hazard if tossed outside the aircraft during flight. Since this is open to interpretation, 25.783(b) infers that the unpressurized flight sequence is short and passengers are strapped into the seats during this period, thus the largest danger is from flight crew cycling the door during take-off.</p>		
45.	n/a – general	Bombardier Aerospace	<p>Bombardier observes that NPA 02-2006 has changed from the version in distribution during the JAA era. As far as we are aware, there is no rationale for THE AGENCY to make changes to JAA version 1 and request that the NPA return to the previous iteration. This is particularly relevant for language that defines whether a fuselage door is inward opening.</p>	<p>Not Accepted</p> <p>The rationale for this NPA and the changes introduced since JAA NPA 25D-301 has been fully documented.</p>	N/A
46.	<p>Part 25</p> <p>25.783(d)(8) ;AMC 25.783(d)(8)</p>	GAMA	<p>Delete 25.783(d)(8) and AMC 25.783(d)(8)</p> <p>Justification: This proposed rule expands the rule beyond the corresponding FAA rule and ARAC working group recommendations with no known valid reason or service experience indicating a need for such a requirement. This requirement would lead to an unnecessary complication of the door operating mechanism introducing additional modes of undesirable failures. Sufficient redundancy is required in the door monitoring systems to prevent erroneous closed, latched and locked indications. There are numerous safeguards in place in remaining proposed rules to ensure that the door is closed, latched and locked. These safeguards include the direct visual inspection</p>	<p>Not Accepted</p> <p>An indication system alone cannot provide an acceptable level of safety.</p> <p>The reference to visual indicators is misleading as these are provided to assist in determining if a door is secured in the event of an indication failure. They are not provided for routine assessment of the door status and in fact do not relate to the position of the door, closed or open, only the status of the locks and latches.</p> <p>The reliability requirements for the indication system relate to the design of the indication system and not to other factors (e.g. human factors, debris in the door surround,</p>	(See revised text in the Appendix to this CRD)

Cmt #	Para	Commenter	Comment/Justification	Response	Resulting text
			<p>provisions (25.783(f)), visual indication required at the operators station (25.783(e)(1) & (2), visual indication required at the flight deck (25.783(e)(3)) (the flight deck visual means must be such that the failures that would cause erroneous indication of closed, latched and locked are improbable - this drives the requirement for redundancy in monitoring devices), aural warning to the pilots (25.783(e)(4)), and pressurization prevention means (25.783(c)). Several of these requirements are independent of each other so that single faults will not result in a false indication of closed, latched, and locked. In the case of some designs, this requirement would negate existing inspection procedures developed for the latches and latching mechanisms, negate existing adjustment and rigging procedures, and add complexity and the associated opportunities for malfunctions.</p>	<p>stiffness of the mechanism, etc.), that could prevent the door moving to the closed position.</p> <p>However, the Agency recognises that the provisions of CS 25.783(d)(8) may not add a safety benefit in some limiting cases. The text of CS 25.783(d)(8) and associated AMC has therefore been developed further. (See also response to Comment 11).</p>	

APPENDIX TO CRD TO NPA 02/2006

The following is revised text to CS-25 following disposition of public comments:

CS 25.783

...

(d)(8) A door that could result in a hazard if not closed, must have means to prevent the latches from being moved to the latched position unless it can be shown that a door that is not closed would always be detected before flight.

AMC 25.783

...

3. DEFINITIONS OF TERMS

...

h. "Initial Inward Opening Movement". In order for a door design to be classified as having inward initial opening movement the design of its stops, guides and rollers and associated mechanism, should be such that positive pressurisation of the fuselage acting on the mean pressure plane of the fully closed door must always ensure a positive door closure force. (See AMC 25.783 Paragraph 5, (d) (4)).

...

5. DISCUSSION OF THE CURRENT REQUIREMENTS

...

(d)(4) Each door for which the initial opening movement is inward, and unlatching of the door could result in a hazard, must have a locking means to prevent the latches from becoming disengaged. The locking means must ensure sufficient latching to prevent opening of the door even with a single failure of the latching mechanism.

For a door to be classified as having Initial Inward Opening Movement before opening outwards, and thus be eligible for some relief regarding the locks compared with other outward opening doors, the following conditions should be fulfilled:

- a) Loads on the door resulting from positive pressure differential of the fuselage should be reacted by fixed (non moveable) structural stops on the door and fuselage doorframe.
- b) The stops must be designed so that, under all 1g aeroplane flight conditions, when the door and fuselage stops are in contact, there is no net force from the pressure differential and door mass or balancing means tending to move the door in the opening direction.
- c) If the stops are used to provide the initial inward opening movement, the stops should be designed such they cause the door to move inwards, typically at a minimum angle of 3° relative to the mean pressure plane, opposing any positive fuselage pressure differential:
 - 1) until the door is in a position where it is clear of the fixed stops and is free to open, or

- 2) until the loads required to overcome friction between the door and fuselage stops are sufficient to prevent the door moving in an opening direction when the door is subjected to loads of +/- 0.5g.
- d) If guides or other mechanisms are used to position the door such that it can move clear of the fixed stops in an opening direction, the means used should, be designed such that it causes the door to move inwards, typically at a minimum angle of 3° relative to the mean pressure plane, opposing any positive fuselage pressure differential and be sufficiently robust to function without significant loss of effectiveness when the door is subject to a differential pressure of 13.8 kPa (2 psi):
- 1) until the door is in a position where it is clear of the fixed stops and is free to open, or
 - 2) until the loads required to overcome friction are sufficient to prevent the door moving in an opening direction when the door is subjected to loads of +/- 0.5g.

On these doors, the locking means should monitor the latch securing means, but need not directly monitor and lock each latch. Additionally, the locking means could be located such that all latches are locked by locking the latching mechanism. With any single failure in the latching mechanism, the means must still lock a sufficient number of latches to ensure that the door remains safely latched.

...

(d)(8) A door that could result in a hazard if not closed, must have means to prevent the latches from being moved to the latched position unless it can be shown that a door that is not closed would always be detected before flight.

For door security, it is good basic design philosophy to provide independent integrity in the closing, latching, locking and indication functions. The integrity of the closing function in particular is vulnerable to human factors and experience has shown that human error can occur resulting in an unsafe condition.

Door designs should incorporate a feature that prevents the latches from moving to the latched position if the door is not closed. The importance of such a feature is that it prevents the latched and locked functions from being completed when the door is not closed.

If the feature is provided by electronic means, the probability of failure to prevent the initiation of the latching sequence should be remote (no greater than 1×10^{-5} /flight hour).

To avoid the potential for an unsafe condition, the means provided to indicate the closed position of the door under sub-paragraph (e) should be totally independent of the feature preventing initiation of the latching sequence.

As an alternative to providing the feature described above, reliance can be placed on trained cabin attendants or flight crew members to determine that certain doors are not fully closed. This alternative is applicable only to doors that are normally operated by these crew members, and where it is clearly evident from within the aircraft by direct visual inspection that the door is not fully closed.