

**Disposition of Public Comments
AC 25.795-3X
Flight Deck Protection (Smoke and Fumes)**

| Comment | Requested Change | Disposition |
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| Transport Canada | | |
| Add Definitions section. | There are enough different terms and context to warrant a definitions section in the AC, focused on areas of the airplane such as ‘occupied areas.’ | The majority of the areas are already defined or well understood. As noted below, paragraph 5.b. has been modified to focus on the flightdeck. Therefore, we have not changed the AC, as proposed. |
| Paragraph 5.b refers specifically to the flightdeck and passenger compartment, whereas AC 25-9A refers to “occupied areas.” | Use the appropriate term, if the more general “occupied areas” is what is really intended. | In fact, this AC is discussing only the flightdeck, so mention of other areas is not relevant. |
| Paragraph 5.b uses the word “prevent” to describe the procedure used, but this may not be correct. | State that the procedure is to evacuate smoke rather than to prevent entry of smoke. | There are existing requirements to evacuate smoke from the flightdeck, and there are requirements pertaining to penetration of smoke from the cargo compartment. This new requirement [§ 25.795(b)(1)(e)(3)] addresses preventing smoke from entering <u>the flightdeck from</u> any other occupiable areas. The rule uses the word “limit” rather than “prevent” but the intent is to address the smoke before it enters the flightdeck. |

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| International Coordinating Council of Aerospace Industries Association | | |
| <p>Paragraph 6. Assumptions. What about an all-cargo airplane that has no flightdeck door (as currently permitted by § 121.313)?</p> | <p>Cargo airplanes are not required to have a flightdeck door, so this procedure wouldn't be directly applicable.</p> | <p>If there is no flightdeck door, then the entire occupied area in communication with the flightdeck is treated as part of the flightdeck for the purposes of § 121.547, <i>Admission to the flightdeck</i>. Smoke that originates in the flightdeck is already dealt with in the regulations. Therefore, o Only smoke originating in occupied areas outside of that would be affected by § 25.795(b)(1)(e)(3).</p> |
| Boeing | | |
| <p>Paragraph 6.b. Include reference to when the systems are assessed for functionality.</p> | <p>Modify paragraph 6.b. as follows: <i>“The airplane structure and systems are functional after the incident. Therefore, no structural or systems damage or reduction in performance need be considered.</i></p> | <p>We agree and have made the suggested change.</p> |
| Boeing and Transport Canada | | |
| <p>Paragraph 6.c. Clarify when compliance wouldn't be required under various operating exceptions.</p> | <p>Both Boeing and Transport Canada had extensive comments on changing paragraph 6.c. so that it gives a better explanation of when the capability to limit smoke penetration is required. Boeing made specific proposals to add</p> | <p>This subject was referred to ARAC for a recommendation because it was clear there was a lack of common understanding, and the current language was insufficiently descriptive to provide adequate guidance. As a result, this paragraph has been extensively rewritten in accordance with</p> |

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| | <p>conditions that were excluded, whereas Transport Canada discussed conditions mentioned already in terms of how they could be acceptable.</p> | <p>the ARAC recommendation. The new language clarifies that there is an emergency procedure associated with this requirement, and that some time may be needed to configure the airplane to satisfy the requirement. The AC now discusses this procedure in detail and provides a time for reconfiguration under certain conditions to ensure that the intent of the requirement is met.</p> |
| <p>Paragraph 6.d. Modify to account for allowances made in paragraph 6.c.</p> | <p>Boeing suggested changing paragraph 6.d. by adding the following:</p> <p><i>“... with the airflow settings selected for either normal, flight deck smoke removal, or cabin smoke removal, whichever results in the lowest flight deck to cabin pressure differential.”</i></p> <p>Transport Canada recommends that the AC refer to “the appropriate flight manual procedure.”</p> | <p>Based on the changes made to paragraph 6.c., this extensive change is not needed. The discussion in paragraph 6.c. addresses these points.</p> <p>In this case, the assumption is that the flightdeck is supplied with outside air, rather than re-circulated air. Certainly, the AFM procedures are relevant, but—if the procedures were to involve re-circulated air—that would violate the assumption in the AC. We have made no change to the AC, other than to clarify that “fresh air” means air from outside.</p> |

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| Paragraph 6.f. refers to “fresh air,” which is very specific. | Change the term “fresh” to “outside” to be clearer. | We agree. See the response above. |
| Boeing and Transport Canada | | |
| Paragraph 7. Explicitly address MMEL dispatch conditions. | Both Boeing and Transport Canada recommend that the allowable dispatch configurations be addressed in the AC. Boeing recommended that they be excluded from consideration, whereas Transport Canada recommended that they be specifically included. | This subject was referred to ARAC for a recommendation. As discussed in the preamble to the rule, the recommendation is that the procedures for protection from flightdeck smoke be demonstrated under any allowable dispatch condition. However, dispatch relief is not controlled by type design, so t this is merely a recommendation in the AC. |
| Boeing | | |
| Paragraph 7. Include reference to paragraph 6.c. | Modify paragraph 7 to add the following at the end of the first sentence: <i>“in all flight configurations except as noted in section 6b and 6c (excepting MMEL).”</i> | We generally agree that paragraph 6.c. should be mentioned. The exact wording could imply exclusions beyond that intended in paragraph 6.c., so there is simply a reference to that paragraph. And as noted above, the AC recommends consideration of all dispatch configurations. |

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| <p>Paragraph 7. implies that analysis alone may be sufficient, but some tests are needed.</p> | <p>Transport Canada states that its experience is that analysis alone has not predicted small differential pressure between adjacent areas well.</p> <p>Boeing, conversely, would like to state the following in this paragraph:</p> <p><i>“Analysis may be used to verify that there is a sufficient positive pressure differential between the flight deck and any adjacent compartment for the required airplane flight conditions. This analysis should be performed utilizing the airflow settings as defined in paragraph 6.d. An applicant will not be required to validate their analysis by performing a flight test.”</i></p> | <p>We have clarified in the preamble and expanded in the AC that initially tests are needed to verify very small differential pressures.</p> <p>We agree that the word “sufficient” should be added. However, the additional language which is recommended implies that validation of analysis is not needed, which is incorrect. Flight tests should be very rare, unless the airplane configuration is unusual and the test described in paragraph 7.b.(1) is not applicable for some reason.</p> |
| Boeing | | |
| <p>Paragraph 7.b.(1) is restrictive in its reference to the polyethylene sheet.</p> | <p>Revised this paragraph, as follows:</p> <p><i>“(1) A sheet of A non-permeable sheet such as polyethylene which is 0.005-inch thick or less 0.002-inch thick or greater may....”</i></p> <p>Also add the following statement:</p> | <p>We agree with the first suggestion.</p> <p>The suggested addition is a little too broad. However, conformity inspection of the sheet is not necessary, and we note that in the AC.</p> |

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| | <p><i>“Any commercial or industrial non-permeable sheet such as polyethylene sheeting is acceptable without conformity.”</i></p> | |
| <p>Paragraph 7.b.(2) has a different procedure than AC 25-9A.</p> | <p>Transport Canada suggests that the current wording has a bias and doesn't account for delays for the crew to recognize and react to a situation. The commenter suggests a direct reference to AC 25-9A</p> <p>Boeing recommends that reference to AC 25-9A be removed because it doesn't discuss this test or issue. Boeing also suggests listing specific settings of the ventilation system because there could be an implication that the systems may have to cope with multiple threats of smoke penetration at once.</p> | <p>The AC is intended to address the situation after the airplane is configured to deal with smoke ingress, and not the time it takes the pilots to do that. This latter aspect is already covered in paragraph 6.c. The intent of reference to AC 25-9A is to cover the general procedures for conducting tests like this, not to demonstrate compliance with the rules covered by that AC. We have modified the paragraph to reflect that intent.</p> <p>As discussed above, reference to AC 25-9A is merely as a source of information in conducting test of this sort. With the changes made to paragraph 6.c., it is now clear that this is an emergency situation, which requires a specific system configuration. There should be no confusion that multiple sources of smoke have to be addressed at the same time.</p> |