

August 9, 2005 (70 FR 46112).

Comments were received from the Airline Pilots Association (ALPA) and the Boeing Company.

*Requested change 1:* ALPA recommends that “\* \* \* a special condition should be added to require that each [emergency] exit provide rescue personnel on the exterior of the aircraft a means to either determine whether the exit’s emergency assist means (slide) is armed or disarmed or a means to disarm the emergency assist means from outside the aircraft.

“Consideration must be given to the exits located on the lower deck just aft of the wing (Doors 3L & 3R). A sufficient view to determine slide usability must be ensured from inside the cabin when the exits above them have been activated and their slides deployed.”

*FAA response:* A means to know whether the exits are disarmed when opened from the outside is covered in § 25.810(a)(1)(i). That is, the slides must automatically disarm when opened from the outside. Regarding the second point, the means to view conditions outside the exit must be sufficient to determine slide usability regardless of whether other slides have been deployed. This requirement is implicit in § 25.809(a). Therefore, we have not changed the special condition, as proposed.

*Requested change 2:* The Boeing Company makes the following comment:

“The certification basis for the Airbus Model A380 does *not* include Amendment 25–116, which included changes to 14 CFR 25.809 (Emergency Exit Arrangement). It appears, however that the FAA is now proposing to apply the requirements of Amendment 25–116 through Special Conditions, without any novel or unusual design features. This is contrary to part 21, which clearly specifies how the type certification basis of the airplane is to be established and when Special Conditions are warranted.”

*FAA response:* The FAA does not agree. The full upper deck is a novel design and warrants enhanced visibility, since passengers will be evacuating from both decks and the slides deploy close to each other. Amendment 25–116 was adopted after the special condition was initiated.

This process is very similar to the way the first widebody requirements evolved: Notice of Proposed Rulemaking 69–33 contained many proposals similar to special conditions for the 747, DC–10, and L1011 airplanes and was later adopted in large part by Amendment 25–32.

### Applicability

As discussed above, these special conditions are applicable to the Airbus A380–800 airplane. Should Airbus apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design features, these special conditions would apply to that model as well under the provisions of § 21.101.

### Conclusion

This action affects only certain novel or unusual design features of the Airbus A380–800 airplane. It is not a rule of general applicability.

### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

■ The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

### The Special Conditions

■ Accordingly, pursuant to the authority delegated to me by the Administrator, the following special condition is issued as part of the type certification basis for the Airbus A380–800 airplane.

In addition to the requirements of § 25.809(a) at Amendment 25–72, the following special condition applies:

Each emergency exit must have means to permit viewing of the conditions outside the exit when the exit is closed. The viewing means may be on the exit or adjacent to it, provided that no obstructions exist between the exit and the viewing means. Means must also be provided to permit viewing of the likely areas of evacuee ground contact with the landing gear extended as well as in all conditions of landing gear collapse. A single device that satisfies both objectives is acceptable.

Issued in Renton, Washington, on August 28, 2006.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM314; Special Conditions No. 25–326–SC]

#### Special Conditions: Airbus Model A380–800 Airplane; Stairways Between Decks

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for the Airbus A380–800 airplane. This airplane will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. Many of these novel or unusual design features are associated with the complex systems and the configuration of the airplane, including its full-length double deck. For these design features, the applicable airworthiness regulations do not contain adequate or appropriate safety standards regarding stairways between decks. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards. Additional special conditions will be issued for other novel or unusual design features of the Airbus Model A380–800 airplane.

**EFFECTIVE DATE:** The effective date of these special conditions is August 28, 2006.

**FOR FURTHER INFORMATION CONTACT:** Holly Thorson, FAA, International Branch, ANM–116, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055–4056; telephone (425) 227–1357; facsimile (425) 227–1149.

#### SUPPLEMENTARY INFORMATION:

##### Background

Airbus applied for FAA certification/validation of the provisionally-designated Model A3XX–100 in its letter AI/L 810.0223/98, dated August 12, 1998, to the FAA. Application for certification by the Joint Aviation Authorities (JAA) of Europe had been made on January 16, 1998, reference AI/L 810.0019/98. In its letter to the FAA, Airbus requested an extension to the 5-year period for type certification in accordance with 14 CFR 21.17(c).

The request was for an extension to a 7-year period, using the date of the

initial application letter to the JAA as the reference date. The reason given by Airbus for the request for extension is related to the, technical challenges, complexity, and the number of new and novel features on the airplane. On November 12, 1998, the Manager, Aircraft Engineering Division, AIR-100, granted Airbus' request for the 7-year period, based on the date of application to the JAA.

In its letter AI/LE-A 828.0040/99 Issue 3, dated July 20, 2001, Airbus stated that its target date for type certification of the Model A380-800 had been moved from May 2005, to January 2006, to match the delivery date of the first production airplane. In a subsequent letter (AI/L 810.0223/98 issue 3, dated January 27, 2006), Airbus stated that its target date for type certification is October 2, 2006. In accordance with 14 CFR 21.17(d)(2), Airbus chose a new application date of December 20, 1999, and requested that the 7-year certification period which had already been approved be continued. The FAA has reviewed the part 25 certification basis for the Model A380-800 airplane, and no changes are required based on the new application date.

The Model A380-800 airplane will be an all-new, four-engine jet transport airplane with a full double-deck, two-aisle cabin. The maximum takeoff weight will be 1.235 million pounds with a typical three-class layout of 555 passengers.

#### Type Certification Basis

Under the provisions of 14 CFR 21.17, Airbus must show that the Model A380-800 airplane meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-98. If the Administrator finds that the applicable airworthiness regulations do not contain adequate or appropriate safety standards for the Airbus A380-800 airplane because of novel or unusual design features, special conditions are prescribed under the provisions of 14 CFR 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Airbus Model A380-800 airplane must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36. In addition, the FAA must issue a finding of regulatory adequacy pursuant to section 611 of Public Law 93-574, the "Noise Control Act of 1972."

Special conditions, as defined in 14 CFR 11.19, are issued in accordance with 14 CFR 11.38 and become part of

the type certification basis in accordance with 14 CFR 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of 14 CFR 21.101.

#### Discussion of Novel or Unusual Design Features

The A380 incorporates seating on two full-length passenger decks, each of which has the capacity of a typical wide body airplane. Two staircases—one located in the front of the cabin and one located in the rear—allow for the movement of persons between decks. With large seating capacities on the main deck and the upper deck of the A380-800 airplane, the staircases need to be able to support movement between decks in an inflight emergency. In addition, although compliance with the evacuation demonstration requirements of § 25.803 does not depend on the use of stairs, there must be a way for passengers on one deck to move to the other deck during an emergency evacuation. This need must be addressed in the certification of the airplane.

The regulations governing the certification of the A380 do not adequately address a passenger airplane with two separate full-length decks for passengers. The Boeing 747 and Lockheed L-1011 airplanes were certificated with limited seating capacity on two separate decks, and special conditions were issued to certificate those arrangements. When the seating capacity of the upper deck of the Boeing 747 exceeded 24 passengers, the FAA issued Special Conditions 25-61-NW-1 for a maximum seating capacity of 32 passengers on the upper deck for take-off and landing. A second set of Special Conditions, 25-71-NW-3, was issued to cover airplanes with a maximum seating capacity of 45 passengers on the upper deck for take-off and landing. That second set of Special Conditions was later modified to address airplanes with a maximum seating capacity of 110 passengers on the upper deck. These previously issued special conditions provided a starting point for the development of special conditions for the A380-800 airplane.

In the case of both the L-1011 and the 747, the special conditions were based on the requirements and associated level of safety in place at the time of application for type certificate. The

requirements and the level of safety have improved significantly since that time, and these special conditions reflect those improvements.

In addition to the requirements of §§ 25.803 and 25.811 through 25.813, special conditions are needed to address the movement of passengers between the two full-length decks on the Model A380. These special conditions provide additional requirements for the stairways to ensure the safe passage of occupants between decks during moderate turbulence, an inflight emergency, or an emergency evacuation.

#### Discussion of Comments

Notice of Proposed Special Conditions No. 25-05-09, pertaining to stairways between decks, was published in the **Federal Register** on August 9, 2005 (70 FR 46110). Comments were received from the Boeing Company, the Airline Pilots Association (ALPA), and the Association of Flight Attendants (AFA).

*Requested change 1:* The Boeing Company states that as a general matter "a single stairway has been shown through service history of the Boeing Model 747-300 and -400 to be sufficient for an upper deck that is approved for up to 110 passengers (or has a single pair of type A exits). By comparison, the FAA is requiring a minimum of two stairways for the Model A380-800, which has *three* pairs of upper deck type A exits (or is theoretically eligible for up to 330 passengers on the upper deck)." The commenter recommends that the special conditions state that one stairway is sufficient for an upper deck that is approved to carry no more than 110 passengers.

*FAA response:* The special conditions pertain to the design of the Model A380-800; thus discussion of designs that require only one stairway is not relevant.

*Requested change 2:* ALPA requests that a special condition be added to ensure that the stairway can be used when the aircraft fuselage suffers minor deformation during a survivable accident or incident.

*FAA response:* The stairway design must comply with all structural requirements; therefore, no change has been made to the special conditions, as proposed.

*Requested change 3:* In terms of Special Condition a., ALPA suggests the following:

"The procedures developed to accommodate the carriage of an incapacitated person from one deck to the other should be demonstrated using personnel from air carrier crews,

representing the largest and smallest persons that the carriers may employ and with the same level of training that will be provided in service.”

*FAA response:* The FAA does not believe that this is necessary. The design of the stairway must be demonstrated to be suitable for evacuation of an incapacitated person, and this might be accomplished by either crew or passengers assisting the crew. The intent of this requirement is to ensure that one of the stairs provide a means to transport an incapacitated person from the upper deck, in much the way such a person would be evacuated along the aisle of a single deck airplane. Any crew duties necessary to facilitate the evacuation should be consistent with existing processes and not require extraordinary effort. The comment is related more to the means of demonstrating compliance with the requirement than the substance of the requirement itself. Therefore, we have not changed the special condition, as proposed.

*Requested change 4:* The Boeing Company requests that Special Condition b. be revised to read as follows:

“There must be at least two stairways between decks that meet the following requirements:

“The stairways must be designed \* \* \* One of these stairways must be the stairway specified in paragraph a. above.”

*FAA response:* The suggested wording is more explicit than that proposed, and we have changed the wording of Special Condition b. accordingly.

*Requested change 5:* Regarding Special Condition c.1., AFA seeks clarification of the types of assistance needed by cabin crew in regard to merging of passengers from the two decks into the stairways. The commenter adds that, “Analysis is not an acceptable tool for demonstrating these requirements [for each stairway between decks].”

*FAA response:* The assistance provided would be consistent with that currently provided by flight attendants to facilitate evacuation. In terms of the method of demonstration used to substantiate that the requirements are met, testing is more likely but analysis could be an appropriate method. Accordingly, no change has been made to the special conditions, as proposed.

*Requested change 6:* Both the Boeing Company and AFA suggest revising Special Condition c.2. to require a handrail on both sides of a stairway, if the stairway is wide enough to accommodate more than a single lane of persons. AFA also suggests that there be

a special condition relative to limit loads on the handrails.

*FAA response:* The current design provides two handrails. The FAA does not consider it necessary to require two handrails, although other performance requirements in this special condition for the stairs may dictate the need for two handrails.

The proposed special conditions require that the handrail design address foreseeable operating conditions, including turbulence and adverse attitude. This will necessitate a structural design capable of performing its function under those conditions. Stating the requirement objectively rather than prescriptively permits more flexibility in the design and takes the specific installation into account. In fact, Airbus has used the design specifications from other industries in the design of the stairs; in practice, therefore, those strength criteria will form the baseline for the design.

*Requested change 7:* The Boeing Company suggests revising Special Condition c.4. to address narrow stairways with handrails on both sides, because such a stairway “can be used safely in the conditions specified without requiring a wall above the handrail or equivalent on each side.”

*FAA response:* The special condition permits an equivalent means, so that—if the use of a handrail were shown to be equivalent in certain cases—the special condition would permit its use.

*Requested change 8:* AFA supports Special Condition c.5. and suggests that there should also be special conditions “requiring that the surface of the treads and landings should also be designed to include adequate slip resistant properties. Additionally, the treads and risers should have uniform dimensions in order to allow the user to establish a uniform gait when using the stairway.”

*FAA response:* The regulations already address slip resistance for surfaces likely to become wet in service, so this aspect is not novel. In terms of the detailed design of the treads and risers, rather than being prescriptive, we are using a performance based approach in the special condition. Performance-based requirements will very likely drive the design, as suggested, since the suggested features are generally regarded as necessary to achieve efficient and safe stair usage.

*Requested change 9:* Although acknowledging that the proposed illumination level is the same as for the rest of the airplane interior, ALPA states that the proposed level of illumination for the stairway is far too low. The commenter recommends that the illumination should be an average of 1

foot-candle with a minimum of 0.1 foot-candle. This is the same as that specified in the NFPA Life Safety Code, 1997.

*FAA response:* As noted by ALPA, the emergency lighting level is consistent with the other requirements for emergency lighting in the cabin as well as for stairs on other airplanes. The general emergency lighting requirements concerning battery discharge and cold-soak will also apply to the lighting on the stairs, so the typical illumination values will, in fact, be much higher. The proposed standards have demonstrated satisfactory service experience. Therefore, we have made no change to the special condition, as proposed.

*Requested change 10:* The Boeing Company suggests revising Special Condition c.8. to read as follows:

“An exit sign must be provided in the upper deck near the stairway, visible to upper deck passengers while seated or standing. In addition, the upper end of the stairway must include an exit sign visible to passengers while descending the stairway, leading them to main deck exits beyond the sign. Both exit signs must meet the requirements of Sec. 25.812(b)(1)(ii).” The commenter further recommends that—if a lower exit sign is required in the stairway—the sign should not be visible to main deck passengers who are not on the stairs.

*FAA response:* As proposed, Special Condition c.8. specifies that an exit sign be visible to a person on the stairway. This will provide guidance to people using the stairway, but not necessarily direct people to the stairway. The optimum evacuation strategy is for people to evacuate from the deck on which they are seated. Adding signs to direct people to the stairs could actually slow the overall evacuation. Conversely, if people do use the stairs, they will have an indication that exits are available. Therefore, we have not changed the text of the Special Conditions, as proposed.

*Requested change 11:* The Boeing Company suggests that Special Condition d. be revised to read, “Each entrance or path to the entrance of a stairway must be visible from a seat designated for flight attendants’ use during taxi, takeoff, and landing. Cabin crew procedures and positions must be established. \* \* \*”

A comment submitted by AFA states, “AFA agrees that cabin crew positions and procedures need to be established to help *manage* the use of the stairs between decks but do not believe that cabin crew can “control” or prevent movement of \* \* \* passengers between the two decks.” The commenter

suggests replacing the word “control” with the word “manage” [or “management”] to reflect a more realistic situation.

*FAA response:* The direct view requirements will be applied to the stairs as they are to other egress paths. The FAA agrees that “manage” is a better term than “control” and has changed the text of Special Condition d. accordingly.

### Applicability

As discussed above, these special conditions are applicable to the Airbus A380–800 airplane. Should Airbus apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design features, these special conditions would apply to that model as well under the provisions of § 21.101.

### Conclusion

This action affects only certain novel or unusual design features of the Airbus A380–800 airplane. It is not a rule of general applicability.

### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

■ The authority citation for these special conditions is as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

### The Special Conditions

■ Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Airbus A380–800 airplane.

In addition to the requirements of §§ 25.803 and 25.811 through 25.813, the following special conditions apply:

a. At least one stairway between decks must meet the following requirements:

The stairway accommodates the carriage of an incapacitated person from one deck to the other. The crew member procedures for such carriage must be established.

b. There must be at least two stairways between decks that meet the following requirements: The stairways must be designed such that evacuees can achieve an adequate rate for going down or going up under probable emergency conditions, including a condition in which a person falls or is incapacitated while on a stairway. One of the stairways must be the stairway specified in paragraph a. above.

c. Each stairway between decks must meet the following requirements:

1. It must have an entrance, exit, and gradient characteristics that—with the assistance of a crew member—would

allow the passengers of one deck to merge with passengers of the other deck during an evacuation and exit the airplane. These entrance, exit, and gradient characteristics must occur with the airplane in level attitude and in each attitude resulting from the collapse of any one or more legs of the landing gear. These requirements must be demonstrated by tests and/or analysis.

2. The stairway must have a handrail on at least one side in order to allow people to steady themselves during foreseeable conditions, including but not limited to the condition of gear collapse on the ground and moderate turbulence in flight. The handrails must be constructed, so that there will be no obstruction on them which will cause the user to release his/her grip on the handrail or will hinder the continuous movement of the hands along the handrail. Handrails must be terminated in a manner which will not obstruct pedestrian travel or create a hazard. Adequacy of the design must be demonstrated by using persons representative of the 5% female and the 95% male.

3. The stairway must be designed and located to minimize damage to it during an emergency landing or ditching.

4. The stairway must have a wall or the equivalent on each side to minimize the risk of falling and to facilitate use of the stairway under conditions of abnormal airplane attitude.

5. Treads and landings must be designed and demonstrated to be free of hazard. The landing area at each deck level must be demonstrated to be adequate in terms of flow rate for the maximum number of people that will be using the stair in an emergency. Treads and risers must be designed to ensure an easy and safe use of the stairway.

6. General emergency illumination must be provided so that—when measured along the centerlines of each tread and landing—the illumination is not less than 0.05 foot-candle.

7. In normal operation, the general illumination level must not be less than 0.05 foot-candles. The assessment must be done under day light and dark of night conditions.

8. Both stairway ends must be indicated by an exit sign visible to passengers when in the stairway. This exit sign must meet the requirements of § 25.812(b)(1)(ii).

9. A floor proximity path marking system which meets the requirements of § 25.812(e) must be available to guide passengers in the stairway to the stairway ends. It must not direct the occupants of the cabin to the stair entrance.

10. The public address system must be audible in the stairway during all flight phases.

11. “No smoking” and “return to seat” signs must be installed and must be visible in the stairway both going up and down and at the stairway entrances.

d. Cabin crew procedures and positions must be established to manage the use of the stairs on the ground and in flight under both normal and emergency situations. This may require that cabin crew members have specific dedicated duties for the management of the stairs during emergency and precautionary evacuations.

e. It should not be hazardous for crew members or passengers who are returning to their seats to use the stairways during moderate turbulence.

Issued in Renton, Washington, on August 28, 2006.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM318; Special Conditions No. 25–329–SC]

#### Special Conditions: Airbus Model A380–800 Airplane, Escape Systems Installed in Non-Pressurized Compartments

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for the Airbus A380–800 airplane. This airplane will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. Many of these novel or unusual design features are associated with the complex systems and the configuration of the airplane, including its full-length double deck. For these design features, the applicable airworthiness regulations do not contain adequate or appropriate safety standards regarding escape systems installed in non-pressurized compartments. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards. Additional