

Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM352; Notice No. 25-06-08-SC]

Special Conditions: Airbus Model A380-800 Airplane, Lithium Ion Battery Installation

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This notice proposes special conditions 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. The Airbus A380-800 will incorporate the use of high capacity lithium ion battery technology in on-board systems. For this design feature, the applicable airworthiness regulations do not contain adequate or appropriate safety standards regarding lithium ion batteries. These proposed 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.

DATES: Comments must be received on or before October 23, 2006.

ADDRESSES: Comments on this proposal may be mailed in duplicate to: Federal Aviation Administration, Transport Airplane Directorate, Attention: Rules Docket (ANM-113), Docket No. NM352, 1601 Lind Avenue, SW., Renton, Washington 98055-3356; or delivered in duplicate to the Transport Airplane Directorate at the above address. All comments must be marked: Docket No. NM352. Comments may be inspected in

the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

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:

Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive as well as a report summarizing each substantive public contact with FAA personnel concerning these proposed special conditions. The docket is available for public inspection before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this notice between 7:30 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive on or before the closing date for comments. We will consider comments filed late, if it is possible to do so without incurring expense or delay. We may change the proposed special conditions in light of the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, include with your comments a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it back to you.

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 has 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, 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

Statement of Issue

The Airbus A380-800 airplane will use lithium ion batteries for its emergency lighting system. Large, high capacity, rechargeable lithium ion batteries are a novel or unusual design feature in transport category airplanes. This type of battery has certain failure, operational, and maintenance characteristics that differ significantly from those of the nickel-cadmium and lead-acid rechargeable batteries currently approved for installation on large transport category airplanes. The FAA is proposing this special condition to require that (1) all characteristics of the lithium ion battery and its installation that could affect safe operation of the Airbus A380-800 airplane are addressed, and (2) appropriate maintenance requirements are established to ensure the availability of electrical power from the batteries when needed.

Background

The current regulations governing installation of batteries in large transport category airplanes were derived from Civil Air Regulations (CAR) Part 4b.625(d) as part of the recodification of CAR 4b that established 14 CFR part 25 in February, 1965. The new battery requirements, 14 CFR 25.1353(c)(1) through (c)(4), basically reworded the CAR requirements.

Increased use of nickel-cadmium batteries in small airplanes resulted in increased incidents of battery fires and failures which led to additional rulemaking affecting large transport category airplanes as well as small airplanes. On September 1, 1977 and March 1, 1978, respectively the FAA

issued 14 CFR 25.1353c(5) and c(6), governing nickel-cadmium battery installations on large transport category airplanes.

The proposed use of lithium ion batteries for the emergency lighting system on the Airbus A380 airplane has prompted the FAA to review the adequacy of these existing regulations. Our review indicates that the existing regulations do not adequately address several failure, operational, and maintenance characteristics of lithium ion batteries that could affect the safety and reliability of the Airbus A380's lithium ion battery installation.

At present, there is limited experience with use of rechargeable lithium ion batteries in applications involving commercial aviation. However, other users of this technology, ranging from wireless telephone manufacturers to the electric vehicle industry, have noted safety problems with lithium ion batteries. These problems include overcharging, over-discharging, and flammability of cell components.

1. Overcharging

In general, lithium ion batteries are significantly more susceptible to internal failures that can result in self-sustaining increases in temperature and pressure (*i.e.*, thermal runaway) than their nickel-cadmium or lead-acid counterparts. This is especially true for overcharging which causes heating and destabilization of the components of the cell, leading to the formation (by plating) of highly unstable metallic lithium. The metallic lithium can ignite, resulting in a self-sustaining fire or explosion. Finally, the severity of thermal runaway due to overcharging increases with increasing battery capacity due to the higher amount of electrolyte in large batteries.

2. Over-discharging

Discharge of some types of lithium ion batteries beyond a certain voltage (typically 2.4 volts) can cause corrosion of the electrodes of the cell, resulting in loss of battery capacity that cannot be reversed by recharging. This loss of capacity may not be detected by the simple voltage measurements commonly available to flight crews as a means of checking battery status—a problem shared with nickel-cadmium batteries.

3. Flammability of Cell Components

Unlike nickel-cadmium and lead-acid batteries, some types of lithium ion batteries use liquid electrolytes that are flammable. The electrolyte can serve as a source of fuel for an external fire, if

there is a breach of the battery container.

These problems experienced by users of lithium ion batteries raise concern about the use of these batteries in commercial aviation. The intent of the proposed special condition is to establish appropriate airworthiness standards for lithium ion battery installations in the Airbus A380-800 airplane and to ensure, as required by 14 CFR 25.601, that these battery installations are not hazardous or unreliable. To address these concerns, the proposed special conditions adopt the following requirements:

- Those sections of 14 CFR 25.1353 that are applicable to lithium ion batteries.
- The flammable fluid fire protection requirements of 14 CFR 25.863. In the past, this rule was not applied to batteries of transport category airplanes, since the electrolytes utilized in lead-acid and nickel-cadmium batteries are not flammable.
- New requirements to address the hazards of overcharging and over-discharging that are unique to lithium ion batteries.
- New maintenance requirements to ensure that batteries used as spares are maintained in an appropriate state of charge.

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 Proposed Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for the Airbus A380-800 airplane.

In lieu of the requirements of 14 CFR 25.1353(c)(1) through (c)(4), the following special conditions apply:

Lithium-ion batteries on the Airbus Model 380–800 airplane must be designed and installed as follows:

(1) Safe cell temperatures and pressures must be maintained during any foreseeable charging or discharging condition and during any failure of the charging or battery monitoring system not shown to be extremely remote. The lithium ion battery installation must preclude explosion in the event of those failures.

(2) Design of the lithium ion batteries must preclude the occurrence of self-sustaining, uncontrolled increases in temperature or pressure.

(3) No explosive or toxic gasses emitted by any lithium ion battery in normal operation or as the result of any failure of the battery charging system, monitoring system, or battery installation—not shown to be extremely remote—may accumulate in hazardous quantities within the airplane.

(4) Installations of lithium ion batteries must meet the requirements of 14 CFR 25.863(a) through (d).

(5) No corrosive fluids or gasses that escape from any lithium ion battery may damage surrounding airplane structure or adjacent essential equipment.

(6) Each lithium ion battery installation must have provisions to prevent any hazardous effect on structure or essential systems caused by the maximum amount of heat the battery can generate during a short circuit of the battery or of its individual cells.

(7) Lithium ion battery installations must have a system to control the charging rate of the battery automatically, so as to prevent battery overheating or overcharging, and,

(i) A battery temperature sensing and over-temperature warning system with a means for automatically disconnecting the battery from its charging source in the event of an over-temperature condition, or,

(ii) A battery failure sensing and warning system with a means for automatically disconnecting the battery from its charging source in the event of battery failure.

(8) Any lithium ion battery installation whose function is required for safe operation of the airplane must incorporate a monitoring and warning feature that will provide an indication to the appropriate flight crewmembers, whenever the state-of-charge of the batteries has fallen below levels considered acceptable for dispatch of the airplane.

(9) The Instructions for Continued Airworthiness must contain maintenance requirements for measurements of battery capacity at appropriate intervals to ensure that batteries whose function is required for safe operation of the airplane will perform their intended function as long as the battery is installed in the airplane. The Instructions for Continued Airworthiness must also contain procedures for the maintenance of lithium ion batteries in spares storage to prevent the replacement of batteries whose function is required for safe operation of the airplane with batteries that have experienced degraded charge retention ability or other damage due to prolonged storage at a low state of charge.

Note: These special conditions are not intended to replace 14 CFR 25.1353(c) in the certification basis of the Airbus A380–800 airplane. The special conditions apply only to lithium ion batteries and their installations. The requirements of 14 CFR 25.1353(c) remain in effect for batteries and battery installations of the Airbus A380–800 airplane that do not utilize lithium ion batteries.

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

Ali Bahrami,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

15 CFR Part 922

Initiation of Review of the Management Plan/Regulations of the Flower Garden Banks National Marine Sanctuary; Intent To Prepare Draft Environmental Impact Statement and Management Plan; Scoping Meetings

AGENCY: National Marine Sanctuary Program (NMSP), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC).

ACTION: Initiation of review of management plan/regulations; intent to prepare environmental impact statement; scoping meetings.

SUMMARY: The Flower Garden Banks National Marine Sanctuary (FGBNMS or Sanctuary) was designated in January 1992, and consists of three separate areas in the Northwestern Gulf of Mexico, known as East Flower Garden,

West Flower Garden and Stetson Banks. The present management plan for the Sanctuary was completed at the time of designation. In accordance with Section 304(e) of the National Marine Sanctuaries Act, as amended, (NMSA) (16 U.S.C. 1431 *et seq.*), the National Marine Sanctuary Program (NMSP) of the National Oceanic and Atmospheric Administration (NOAA) is initiating a review of the management plan, to evaluate substantive progress toward implementing the goals for the Sanctuary, and to make revisions to the plan and regulations as necessary to fulfill the purposes and policies of the NMSA.

The proposed revised management plan will likely involve changes to existing policies and regulations of the Sanctuary, to address contemporary issues and challenges, and to better protect and manage the Sanctuary's resources and qualities. The review process is composed of four major stages: information collection and characterization; preparation and release of a draft management plan/environmental impact statement, and any proposed amendments to the regulations; public review and comment; and preparation and release of a final management plan/environmental impact statement, and any final amendments to the regulations. NOAA anticipates completion of the revised management plan and concomitant documents will require approximately eighteen to twenty-four months.

NOAA will conduct public scoping meetings to gather information and other comments from individuals, organizations, and government agencies on the scope, types and significance of issues related to the Sanctuary's management plan and regulations. The scoping meetings are scheduled for October 17, 19, and 24, 2006, as detailed below.

DATES: Written comments should be received on or before November 10, 2006.

Scoping meetings will be held at:
(1) October 17, 7–10 p.m., Webster, TX (Houston/Galveston area).
(2) October 19, 7–10 p.m., Corpus Christi, TX.
(3) October 24, 7–10 p.m., New Orleans, LA.

ADDRESSES: Written comments may be sent to the Flower Garden Banks National Marine Sanctuary (Management Plan Review), 4700 Avenue U, Building 216, Galveston, Texas 77551. Comments will be available for public review at the same address.