

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98057-3356**

In the matter of the petition of

**The Boeing Company**

Sections 25.855(b), 25.855(h)(2), 25.857(e)(2), 25.857(e)(3), 121.221(f)(1), 121.221(f)(2) and 121.221(f)(3) and 121.223 of Title 14, Code of Federal Regulations

**Regulatory Docket No. FAA-2005-21786  
and  
Regulatory Docket No. FAA 2005-22747**

**AMENDED PARTIAL GRANT OF EXEMPTION**

Grant of Exemption No. 8769, issued August 18, 2006, exempted Boeing Model 747-400 Large Cargo Freighter (LCF) airplanes from the requirements of Title 14, Code of Federal Regulations (CFR) §§ 25.855(b), 25.855(h)(2), 25.857(e)(2), 25.857(e)(3), 121.221(f)(1), 121.221(f)(2), 121.221(f)(3) and 121.223. Upon further review, the FAA has determined that an exemption from the part 121 operational rules cited in Exemption No. 8769 is not required. This amendment removes the specified part 121 rules from the exemption.

**The Petitions for Exemption and Partial Grant of Exemption**

By letters dated June 30, 2005 (BDCO-05-00692), and October 13, 2005 (BDCO-05-01587), Mr. D. B. Marcander, Lead Project Administrator, The Boeing Company, PO Box 3707, Mail Code 67-LR, Seattle, WA 98124-2207, petitioned for an exemption from the requirements of §§ 25.855(b), 25.855(h)(2), 25.857(e)(2), 25.857(e)(3), 121.221(f)(1), 121.221(f)(2), 121.221(f)(3) and 121.223 of Title 14, Code of Federal Regulations (14 CFR) for the main deck Class E cargo compartment of the 747-400 Large Cargo Freighter (LCF), respectively. The exemption was sought to relieve these airplanes from the 14 CFR part 25 and 14 CFR part 121 requirements to provide a complete cargo compartment liner, conduct flight tests to show compliance to smoke penetration requirements, provide a smoke detection system within the main deck cargo compartment, and provide a means to shut off the ventilating airflow to, or within, the main deck cargo compartment.

Based on its evaluation of each petition, and the only comment received during the public comment period, the FAA determined that there was sufficient justification for a partial grant of exemption from §§ 25.855(b), 25.855 (h)(2), 25.857(e)(2), 25.857(e)(3), 121.221(f)(1), 121.221(f)(2), 121.221(f)(3) and 121.223.

### **Basis for This Amended Exemption**

Upon further examination of Exemption No. 8769, the FAA has determined that the Boeing request for an exemption from certain part 121 operational rules was not needed. Those rules specifically apply to airplanes approved before November 1, 1946. Therefore, no exemption was required from those rules for the Boeing Model 747-400 LCF airplane.

### **Notice and Public Procedure**

The FAA has waived the requirement to publish a summary of the discussion concerning the amendment of Exemption No. 8769 because a Notice of Petition for Exemption was published in the Federal Register on November 7, 2005 (70 FR 67528), for the part 121 operational rules noted above. One comment was received and was considered in the FAA's analysis for the grant of that exemption.

### **The FAA's Analysis**

The FAA considered the following factors in its analysis of Boeing's petitions for exemption and the comment received as a result of the public comment period for those petitions:

- (1) Need for the exemption;
- (2) The petitioner's design for a limited number of very large, cargo freighter airplanes that would be used exclusively for carrying cargo to support the production of Boeing Model 787 airplanes (although components from other Boeing business products could also be carried provided they meet the ignition and flammability requirements);
- (3) Due to the large volume and ventilation flow rate in the compartment, conventional smoke detectors would likely not be sufficiently robust and sensitive to detect a fire within the parameters of the current rules (that is, within 1 minute). The challenge of designing a smoke detector system to accomplish this task was, by itself, insufficient to justify the petition for exemption. However, when considered with (a) the limitations on cargo, (b) unpressurized cargo compartment, and (c) limited number of airplanes; the FAA acknowledged that the probability of a fire was very remote; and
- (4) FAA acceptance that the mitigating design and operational features were sufficient to provide an adequate level of safety, considering the operational

needs of the petitioner. The FAA's grant of the exemption was based on the fact that the material being carried would meet flammability criteria and restrictions on ignition and supplemental oxygen sources.

The FAA concluded that there was sufficient justification for a partial grant of exemption from the requirements of §§ 25.855(b), 25.855 (h)(2), 25.857(e)(2), 25.857(e)(3), 121.221(f)(1), 121.221(f)(2), 121.221(f)(3) and 121.223, provided that the 5 conditions specified in Exemption No. 8769 were met. However, after further review of the applicability of part 121, subpart J, the FAA has determined that §§ 121.221(f)(1), 121.221(f)(2), 121.221(f)(3) and 121.223 are not applicable operating rules for Boeing Model 747-400 series airplanes, including the Model 747-400 LCF. In particular, per § 121.211, §§ 121.221 and 121.223 apply only to airplanes type certificated under Aero Bulletin 7A or the Civil Air Regulations, part 4, in effect before November 1, 1946. The FAA has determined that the Boeing request for an exemption from the specified part 121 operational rules was not needed and that an exemption from those rules is not required.

In addition, the applicant has installed a camera viewing system in the cargo compartment that affords the pilots with the capability of determining the status of the cargo compartment at any time. This camera system is part of the type design and was considered in the overall assessment of the acceptability of the airplane. The presence of this camera system was a significant factor in our decision to grant the original partial grant of exemption and is still a significant factor in our decision to grant this amended partial grant of exemption. We have concluded that the safety benefits of the camera system are sufficient to warrant that Condition 2 (camera viewing system) from the original Exemption No. 8769 be retained in this amended exemption.

### **The FAA's Decision**

In consideration of the foregoing, I find that an amendment to Exemption No. 8769 is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, The Boeing Company is hereby granted an amendment to Exemption No. 8769 from the requirements of 14 CFR §§ 25.855(b), 25.855 (h)(2), 25.857(e)(2), and 25.857(e)(3). The amendment is granted to the extent necessary to exclude the need for a complete cargo compartment liner, conduct flight tests to show compliance to smoke penetration requirements, provide a smoke detection system within the main deck cargo compartment, and provide a means to shut off the ventilating airflow to, or within, the main deck cargo compartment. Exemption No. 8769 is hereby amended by removing the grant of exemption from certain operational rules of part 121. This amended partial grant of exemption permits Boeing Model 747-400 LCF carriage of all material that supports Boeing's corporate business line and meets the flammability related cargo acceptance criteria contained in FAA approved Boeing Document D926U013-44. All of the limitations and conditions specified in Exemption No. 8769 apply to this amended exemption, and are listed below.

This amended partial grant of exemption is subject to the following limitations and conditions:

1. The Boeing Model 747-400 LCF Airplane Flight Manual (AFM) must include a limitation for cargo carriage in the Certificate Limitations section, and identify the FAA-approved Boeing Model 747-400 LCF Weight and Balance Manual (WBM) for the list of allowable cargo. The WBM will refer to the "Allowable Cargo" document that will identify the subassemblies acceptable for shipment, and the acceptable shipment configurations.
2. The Boeing Model 747-400 LCF AFM must include a limitation for cargo carriage in the Certificate Limitations section, which states that the cargo compartment camera viewing system must be operational to enable cargo to be carried.
3. Any modifications to the Boeing flammability related cargo acceptance criteria (i.e., Boeing Document D926U013-44) must be submitted to the cognizant aircraft certification office for review and approval prior to implementation for use on the Boeing Model 747-400 LCF airplane and after any modifications to the cargo acceptance criteria. Boeing must create a process for approval of revisions/modifications to this document and have this process in place prior to delivery of the first Boeing Model 747-400 LCF airplane.
4. Prior to operational flights, Boeing must have a Cargo Control Process which defines the method of ensuring compliance to Boeing Document D926U013-44. This Boeing Process Instruction document will define the process for maintaining configuration control of the Model 787 and other Boeing corporate business shipping assemblies. The information must be provided to Model 787 suppliers and other Boeing corporate business suppliers shipping cargo on the Model 747-400 LCF prior to operational flights. Each supplier will be required to adhere to the process.
5. Any parts (including packing materials) which fail to meet the flammability criteria in Boeing Document D926U013-44 will be suitably isolated, enclosed, and a "Safe Method of Transport" will be demonstrated per the requirements of Boeing Document D926U013-44. Each such item and its method of carriage will be reviewed and approved by the cognizant aircraft certification office prior to implementation for use on the Boeing Model 747-400 LCF airplane.

Issued in Renton, Washington, on January 29, 2007.

Signed by Ali Bahrami

Ali Bahrami  
Manager, Transport Airplane Directorate  
Aircraft Certification Service