

**UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of

Airbus SAS

Section 25.841(a)(2)(i) and (ii), Amendment
25-87 of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2005-20139

AMENDED PARTIAL GRANT OF EXEMPTION

At an Airbus-FAA meeting in Hamburg, Germany, on April 19-20, 2006, Airbus requested amendment of Exemption No. 8695, a Partial Grant of Exemption issued on March 24, 2006. The Partial Grant of Exemption exempts Airbus Model A380-800 airplanes from the requirements of 14 CFR 25.841(a)(2)(i) and (a)(2)(ii).

The Initial Petition and Partial Grant of Exemption

By letter dated December 7, 2004 (L21DO4027150), Mr. Wolfgang Engler, Vice President, Airbus SAS, 1 Rond Point Maurice Bellonte 3 1707 Blagnac Cedex, France, petitioned to exempt the Model A380-800 airplanes from the requirements of 14 CFR 25.841(a)(2)(i), (a)(2)(ii), and (a)(3), as amended by Amendment 25-87. The exemption was sought to relieve these airplanes from the requirement that—during a decompression caused by failures of the fuselage structure, the engines, or other systems—airplane cabin pressure altitude not exceed 25,000 feet for more than 2 minutes or exceed 40,000 feet for any duration.

Based on its evaluation of the petition and the comments received, the FAA determined that there was sufficient justification for a partial grant of exemption from § 25.841(a)(2)(i) and (ii). On March 24, 2006, we issued Exemption 8695. In issuing the Partial Grant of Exemption, the FAA imposed conditions pertaining to the following:

- The maximum indicated operating pressure altitude,
- Flightdeck crew procedures for a rapid decompression event,
- Flight test data corroborating descent profiles used in Airbus' analysis, and
- Dispatch with certain system malfunctions would be time limited or the maximum operating pressure altitude would be reduced.

In terms of § 25.841(a)(3), we determined that Airbus is in compliance, and thus relief from that regulation is not necessary.¹

The Request for Amendment

At an Airbus-FAA meeting held in Hamburg, Germany, on April 19-20, 2006, Airbus requested the following amendments to Exemption 8695:

- (1) Increasing the maximum exposure time to 5 minutes for cabin pressure altitudes above 25,000 feet after decompression from any uncontained engine failure condition not shown to be extremely improbable. Such an increase would allow more time for the airplane to descend from an altitude of 43,000 feet to 25,000 feet.
- (2) Deleting Condition 4, which requires
“If dispatch is deemed appropriate with a malfunctioning system that is required to ensure the airplane is capable of performing an emergency descent, then the Master Minimum Equipment List must limit dispatch to a

¹ Copies of the petition submitted by Airbus, the comments received, and the FAA's Partial Grant of Exemption are available at <http://dms.dot.gov> (Select Simple Search, then enter Docket Number 20139).

maximum flight altitude of 40,000 feet, unless other regulations or limitations require a lower altitude.”

Airbus suggested instead that dispatch under such conditions be assessed by the Joint Flight Operations Evaluation Board.

At the meeting, the FAA agreed to consider Airbus’ request to amend Exemption 8695.

Notice and Public Procedure

The FAA has waived the requirement to publish a summary of the discussion concerning amendment of Exemption No. 8695, because a Notice of Petition for Exemption was published in the Federal Register on January 13, 2005. Four comments were received and were considered in the FAA’s analysis of the petition.

The FAA’s Analysis of the Request for Amendment

In its analysis of the Airbus Petition for Exemption, dated December 7, 2006, and the comments received, the FAA considered the following factors:

- (1) Need for the exemption;
- (2) Conformance of a grant of exemption with applicable FAA policy, specifically the Mechanical Systems Harmonization Working Group (MSHWG) Final Report on § 25.841(a)(2) and (a)(3) and our Interim Policy on Amendment 25-87 Requirements;
- (3) Review of historical data and research;
- (4) Fuselage holes caused by debris from uncontained engine rotor failure; and
- (5) Use of supplemental oxygen.

We concluded that there was sufficient justification for a partial grant of exemption from § 25.841(a)(2)(i) and (a)(2)(ii), provided that the 4 conditions discussed above were met. Condition 4, pertaining to dispatch with a malfunctioning system required for the airplane to perform an emergency descent, was included, because the Airbus petition described a design enhancement that would help balance the risk of

operating at higher altitudes. That enhancement is the electric backup system for the wing spoilers, which would aid in performing an emergency descent should the normal hydraulic systems be affected by an uncontained engine rotor failure.

At the Airbus-FAA meeting in Hamburg, Airbus indicated that there had been no change in the public interest and safety conditions described in its Petition for Exemption, dated December 7, 2004. The FAA took this information into account in analyzing Airbus' request for amendment of Exemption No. 8695 and has reached the following conclusions:

1. The time limit of 3 minutes for cabin pressure altitude to exceed 25,000 feet is still appropriate. As stated in Exemption 8695:

“The FAA reviewed this petition in the context of the MSHWG Final Report on § 25.841(a)(2) and (a)(3) and of [the final version] of our Interim Policy on Amendment 25-87 Requirements....The basis of the Interim Policy is data from research on the response of humans and other primates to changes in ambient pressure. Evaluation of this data indicates that there is a direct correlation between the alveolar partial pressure of oxygen time integral and the likelihood of fatalities or permanent physiological damage to those exposed to such pressure changes. That is, as the value of the integral increases, the likelihood of fatalities or permanent physiological damage also increases....Accordingly, our Interim Policy focuses on minimizing the likelihood that—if a person is exposed to high altitude cabin pressure from any failure not shown to be extremely improbable—he will suffer permanent physiological damage.”

2. In terms of deleting Condition 4, we have determined that it is appropriate that the Joint Flight Operations Evaluation Board evaluate dispatch with a malfunctioning system that is required to ensure that the airplane is capable of performing an emergency descent. In reconsidering this issue, we recognize that identifying conditions for dispatch

relief is the appropriate function of the Joint Flight Operations Evaluation Board.

Therefore, specifying those conditions in the exemption itself is unnecessary.

The Partial Grant of Exemption

In consideration of the foregoing, I find that an amendment to the partial grant of exemption (Exemption No. 8695) is in the public interest regarding 14 CFR 25.841(a)(2)(i), and 25.841(a)(2)(ii), as amended by Amendment 25-87. Therefore, pursuant to the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, the request of Airbus to amend Exemption No. 8695 by removing Condition No. 4 is hereby granted.

Regarding the provisions of § 25.841(a)(3), the petitioner complies with the regulation, since its analysis did consider fuselage structure, engine failures, and system failures. Therefore, relief from this requirement is not necessary.

The partial grant of exemption from § 25.841(a)(2)(ii) will permit cabin pressure altitude to exceed 40,000 feet for 1 minute (but not to exceed 43,000 feet for any duration) after decompression from any uncontained engine failure condition not shown to be extremely improbable. The partial grant of exemption from § 25.841(a)(2)(i) will permit cabin pressure altitude to exceed 25,000 feet for more than 2 minutes (but not more than 3 minutes) after decompression from any uncontained engine failure condition not shown to be extremely improbable, allowing time for the airplane to descend from an altitude of 43,000 feet to 25,000 feet.

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

1. The Airplane Flight Manual for the A380-800 must indicate that the maximum indicated operating pressure altitude is 43,000 feet.
2. The Airplane Flight Manual must contain applicable flightdeck crew procedures for a rapid decompression event. The section of the Airplane Flight Manual for the A380-800 which pertains to actions in the event of a decompression must state that the flightdeck crew should initiate a descent at the maximum rate of descent and safe descent speed, which is typically the maximum operating speed (V_{MO}/M_{MO}) assuming structural integrity of the airplane.

3. The petitioner must submit certification flight test data for the Model A380-800 that corroborate the descent profiles used in the analysis to show that after decompression at an airplane indicated operating pressure altitude of 43,000 feet, the cabin pressure altitude will not exceed 25,000 feet for more than 3 minutes or 40,000 feet for more than 1 minute.

Issued in Renton, Washington, on September 22, 2006.

/s/ Ali Bahrami
Manager
Transport Airplane Directorate
Aircraft Certification Service