



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Memorandum

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Subject: Action: Review and Concurrence, Equivalent Level of Safety Finding for Embraer Model EMB-135BJ  
FAA Project Number No. AT5124AT-T  
Date: August 15, 2002  
Reg. Ref: 25.831(a)

From: Manager, Propulsion and Mechanical Systems, ANM-112  
Reply to: Carla Worthey  
Attn of: ACE-118 A

To: Manager, Atlanta ACO, ACE-115 A  
ELOS Memo #: AT5124AT-T-S-3

## Background

14 CFR § 25.831(a), Amendment 25-41, requires that “Each passenger and crew compartment must be ventilated, and each crew compartment must have enough fresh air (but not less than 10 cu. ft. per minute per crewmember) to enable crewmembers to perform their duties without undue discomfort or fatigue.” Since Embraer has proposed the operation of the EMB-135BJ with air conditioning packs off during takeoff, Embraer will have to show an equivalent level of safety to the provisions of § 25.831(a), as amended by amendment 25-41.

## Applicable regulation(s)

25.831(a)

## Regulation(s) requiring an ELOS

25.831(a)

## Description of compensating design features or alternative standards which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)

Embraer has shown by analysis that the ventilation system on the EMB-135BJ continues to provide an acceptable environment in the passenger cabin and cockpit for the brief period during takeoff when the ventilation system is not operating normally. Embraer has also demonstrated that the degradation of crewmember air quality, with the air-conditioning packs off, does not reach a level that would cause undue discomfort or fatigue to the point that it could affect the performance of their duties. Additionally, Embraer has defined the maximum period of operation with the AC packs off, and has specified this in the EMB-135BJ Airplane Flight Manual (AFM).

**Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation**

Embraer has shown that takeoff operations with the air conditioning packs off on the EMB-135BJ meets Advisory Circular AC 25-20 guidelines, and is safe for the integrity and comfort of the occupants. Therefore, the design with associated operational limitations provided in the AFM provides an equivalent level of safety to FAR 25.831 at Amendment 25-41.

**FAA approval and documentation of the ELOS**

The FAA has approved the aforementioned Equivalent Level of Safety Finding in Issue Paper S-3. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section (TC's & ATC's) or on page 3 of the STC Certificate. [E.g. Equivalent Safety Findings have been made for the following regulation(s): 25.831(a) Ventilation (documented in TAD ELOS Memo No. AT5124AT-T-S-3)].

Original signed by Neil D. Schalekamp

8/21/02

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Manager, Propulsion and Mechanical Systems, ANM-112

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Date

ELOS Originated by Atlanta ACO:	Program Manager: Carla Worthey	Routing Symbol ACE-118 A
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