



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

Small Airplane Directorate
901 Locust
Kansas City, MO 64106

NOV 1 2007

Exemption No. 9550
Regulatory Docket No. FAA-2007-28080

Mr. Sergio Augusto Viana de Carvalho
Embraer Aircraft Company
Av. Brig. Faria Lima, 2170, 12227-901
S. Jose dos Campos – SP
Brazil

Dear Sergio Augusto Viana de Carvalho,

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption.

The Basis for Our Decision

By letter dated April 23, 2007, you petitioned the Federal Aviation Administration (FAA) on behalf of Embraer Aircraft Company for an exemption from § 23.181(b) of Title 14, Code of Federal Regulations (14 CFR) to the extent necessary to allow Embraer to certify the Embraer Model 505 to be type certificated at a reduced level of dynamic lateral-directional stability after a yaw damper system failure.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to Embraer.

The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grant of Exemption No. 8323 (copy enclosed), the FAA found that, in the case of Dutch Roll, some existing aircraft meet Dutch Roll damping requirements at low altitude and low speed but not at high altitude and high speed. This is the situation with the Embraer Model 505. In these cases, the FAA has allowed continued flight following a yaw damper failure provided the airplane is controllable and can safely transition to a reduced flight envelope in which Dutch Roll damping requirements are met.

Regarding public interest, we believe that granting the exemption is in the public interest. To require the airframe to be modified to inherently provide the required damping would result in a much larger airplane that would not be as fuel efficient as a design that was optimized for the high altitude, high speed environment. To require a less efficient design when the necessary level of safety can otherwise be provided is not in the public interest. Likewise, to require a more complex and expensive yaw damper system design is not in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They do not differ materially from those presented by the petitioners in the enclosed grants of exemption;
- The reasons stated by the FAA for granting the enclosed exemptions also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

Under the authority contained in 49 U.S.C. 40113 and 44701, as amended, which the FAA Administrator has delegated to me, I hereby grant Embraer Aircraft Company an exemption from 14 CFR § 23.181(b) to the extent necessary to permit type certification of the Model 505 airplane, subject to the conditions and limits described below.

Conditions and Limitations

1. Embraer Aviation shall define a reduced operating envelope in which the Dutch Roll requirements of 14 CFR § 23.181(b) are met without yaw damper for each flap configuration.
2. An FAA pilot evaluation shall be made to verify that no unsafe condition exists with the yaw damper failed. This evaluation shall include controllability and transition (descent and/or deceleration) from any combination of altitude and speed critical for yaw damper failure to the reduced operating envelope, approach and landing.
3. A limitation shall be placed in the Airplane Flight Manual that restricts operation of the airplane to the reduced operating envelope if the yaw damper fails.
4. Following landing with a failed yaw damper, the airplane may be relocated if necessary to make repairs, however; the relocation flight must be restricted to operations in the reduced operating envelope.

Issued in Kansas City, Missouri on November 1, 2007.

Sincerely,



For Kim Smith
Manager, Small Airplane Directorate
Aircraft Certification Service