

EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

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

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COMMENT:

Friday, January 23, 2004, we issued EAD 2004-02-51 with a typo in the "Notes" paragraphs. On page 4 of the EAD, "Note 2" should read "Note 1". Monday, January 26, 2004, we corrected the pdf version and this copy of the EAD. All other information remains the same.

DATE: January 23, 2004

AD #: 2004-02-51

Transmitted as follows is emergency airworthiness directive (AD) 2004-02-51, for the attention of all owners and operators of all Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model EMB-135 and -145 series airplanes.

Background

The FAA has received a report that the flightcrew of an EMBRAER Model EMB-135 series airplane experienced rudder control difficulties during takeoff. The airplane made an emergency landing; no injuries were reported. Investigation revealed that the upper and lower control rods for the aft rudder section had failed. (The rudder is composed of a forward and an aft section.) The National Transportation Safety Board is currently investigating the cause of the control rod failure. The airplane on which the incident occurred had accumulated 6,804 total flight hours and 6,371 total flight cycles. Although the effect is unknown at this time, the airplane was operating without Access Panel 312AR, as allowed by the Configuration Deviation List (CDL). Failure of these control rods, if not corrected, could result in loss of rudder control, or a possible rudder jam. Also, an unrestrained aft rudder could enter a flutter mode, which could result in loss of control of the airplane.

The rudder control rods on all EMBRAER Model EMB-135 and -145 series airplanes are identical to those on the affected Model EMB-135 airplane. Therefore, all of these airplanes may be subject to the same unsafe condition.

Explanation of Relevant Service Information

EMBRAER has issued Alert Service Bulletin 145-27-A105, dated January 23, 2004, which describes procedures for:

- A one-time visual inspection, including measurement, of the aft rudder control rods to determine if they are assembled correctly and to detect signs of structural damage, cracks, pitting, or deformation.
- If any discrepancy is found, replacement of the control rods with new rods, accomplishment of a backlash test to determine the condition of the rudder bearings, and accomplishment of any related applicable corrective action.

The service bulletin also recommends that any airplane without Access Panel 312AR installed should have the panel reinstalled.

The Departamento de Aviação Civil (DAC), which is the airworthiness authority for Brazil, classified this service bulletin as mandatory and issued Brazilian emergency airworthiness directive 2004-01-07, dated January 23, 2004, to ensure the continued airworthiness of these airplanes in Brazil.

FAA's Conclusions

This airplane model is manufactured in Brazil and is type certificated for operation in the United States under the provisions of section 21.29 of the Federal Aviation Regulations (14 CFR 21.29) and the applicable bilateral airworthiness agreement. Pursuant to this bilateral airworthiness agreement, the DAC has kept us informed of the situation described above. We have examined the findings of the DAC, reviewed all available information, and determined that AD action is necessary for products of this type design that are certificated for operation in the United States.

Explanation of the Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of this same type design registered in the United States, this airworthiness directive is issued to require accomplishment of the following actions per the service bulletin described previously (except as discussed below under the heading "Difference Between This AD and the Service Bulletin"):

- A one-time general visual inspection of the aft rudder control rods to detect any discrepancy (including, but not limited to, incorrect installation, corrosion pitting, cracking, looseness, deformity, or structural damage).
- If any discrepancy is found, replacement of the affected aft rudder control rod with a new or serviceable control rod, and accomplishment of a backlash test (to detect worn rudder bearings) and any applicable corrective action.

This AD also requires the following actions, which are also specified by the parallel Brazilian emergency airworthiness directive:

- A general visual inspection to determine if Access Panel 312AR is installed, and re-installing the panel.
- A revision to the CDL to remove reference to Access Panel 312AR (thus prohibiting operation without that access panel installed).

Difference Between This AD and the Service Bulletin

Although the service bulletin recommends that all inspection results, whether positive or negative, be reported to the manufacturer, this AD requires operators to submit a report to us only if a discrepancy is found.

Differences Between This AD and the Parallel Brazilian Emergency Airworthiness Directive

The Brazilian emergency airworthiness directive specifies that, if any discrepancy is found, both control rods must be replaced. However, this AD requires that only discrepant control rods must be replaced before further flight. We find that replacement of only discrepant control rods will adequately address the unsafe condition.

Also, the Brazilian airworthiness directive specifies that, if Access Panel 312AR is missing, this panel must be installed before the next flight. However, this AD requires that this panel must be installed within 10 flight cycles after the inspection. In developing an appropriate compliance time for this installation, we considered the degree of urgency associated with the subject unsafe condition, the average utilization of the affected fleet, and the availability of necessary parts. In light of all of these factors, we find that a 10-flight-cycle compliance time represents an appropriate interval of time for affected airplanes to continue to operate without compromising safety.

We have coordinated these differences with the DAC, and they concur.

Interim Action

This is considered to be interim action. The inspection report that is required by this AD will enable us, the DAC, and the manufacturer to obtain better insight into the unsafe condition, and eventually to develop further action to address the unsafe condition, if necessary. If further action is identified, we may consider further rulemaking.

Special Flight Permits

On July 10, 2002, the FAA issued a new version of 14 CFR part 39 (67 FR 47997, July 22, 2002), which governs the FAA's airworthiness directives system. As amended, part 39 provides for the FAA to add special requirements for operating an airplane to a repair facility to do the work required by an airworthiness directive. For the purposes of this AD, we have determined that a special flight permit would be permitted, but with certain limitations.

Determination of Rule's Effective Date

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this AD effective in less than 30 days.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this AD.

2004-02-51 EMPRESA BRASILEIRA DE AERONAUTICA S.A. (EMBRAER): Docket No. 2004-NM-14-AD.

Applicability: All Model EMB-135 and -145 series airplanes, certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

To detect and correct failure of the control rods for the aft rudder, which could result in loss of control of the airplane, accomplish the following:

One-Time Inspection and Configuration Deviation List Revision

(a) Within 10 days or 100 flight cycles after the receipt of this AD, whichever is first, accomplish paragraphs (a)(1), (a)(2), and (a)(3) of this AD.

(1) Perform a general visual inspection of the aft rudder control rods to detect any discrepancy (including, but not limited to, incorrect installation, corrosion pitting, cracking, looseness, deformity, or structural damage), and measure the dimension of the aft rudder control rods, per EMBRAER Alert Service Bulletin 145-27-A105, dated January 23, 2004.

(2) Perform a general visual inspection to determine if Access Panel 312AR is installed on the airplane.

(3) Revise the Configuration Deviation List (CDL) to remove Access Panel 312AR from the CDL (thus prohibiting operation without that access panel installed). (This may be accomplished by inserting a copy of this AD into the CDL.)

Note 1: For the purposes of this AD, a general visual inspection is defined as: "A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure, or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to enhance visual access to all exposed surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight, or droplight and may require removal or opening of access panels or doors. Stands, ladders, or platforms may be required to gain proximity to the area being checked."

Corrective Actions and Related Investigative Action

(b) If any discrepancy is found during any inspection required by paragraph (a) of this AD: Accomplish paragraphs (b)(1) and (b)(2) of this AD, as applicable.

(1) If any discrepancy is found during the inspection required by paragraph (a)(1) of this AD: Before further flight, replace the affected aft rudder control rod with a new or serviceable control rod, and perform a backlash test (to detect worn rudder bearings) and any applicable related corrective action, per EMBRAER Alert Service Bulletin 145-27-A105, dated January 23, 2004. (If superficial corrosion is found on the rod, but no other discrepancy is found, replacement of the rod is not required.)

(2) If Access Panel 312AR was not installed on the airplane during the inspection required by paragraph (a)(2) of this AD: Within 10 flight cycles after the inspection, install a new or serviceable panel in this location.

Reporting Requirement

(c) Submit a report of discrepancies found during the inspections required by paragraph (a) of this AD, and the test required by paragraph (b)(1) of this AD, to the Manager, International Branch, ANM-116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington

98055-4056; fax (425) 227-1320. Submit the report at the applicable time specified in paragraph (c)(1) or (c)(2) of this AD. The report must include the inspection results, a description of the discrepancies found, the airplane serial number, and the number of landings and flight hours on the airplane. Under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget (OMB) has approved the information collection requirements contained in this AD and has assigned OMB Control Number 2120-0056.

(1) If the inspections/test are done after receipt of this AD: Submit the report within 7 days after the inspection.

(2) If the inspections/test were accomplished prior to receipt of this AD: Submit the report within 7 days after receipt of this AD.

Parts Installation

(d) After receipt of this AD, no person may install an aft rudder control rod having part number 120-09421-251 (upper control rod) or 120-09421-249 (lower control rod), on any airplane, unless it has been inspected per the requirements of this AD.

Special Flight Permit

(e) Special flight permits with a limitation may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the backlash test required by this AD can be accomplished. The special flight permits would have a limitation that the discrepant aft rudder control rod must have been replaced.

Alternative Methods of Compliance

(f) In accordance with 14 CFR 39.19, the Manager, International Branch, ANM-116, is authorized to approve alternative methods of compliance for this AD.

Note 2: The subject of this AD is addressed in Brazilian emergency airworthiness directive 2004-01-07, dated January 23, 2004.

Effective Date

(g) AD 2004-02-51, issued on January 23, 2004, becomes effective upon receipt.

For further information contact: Robert Breneman, Manager, International Branch, ANM-116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-1263; fax (425) 227-1149.

Issued in Renton, Washington, on January 23, 2004.

Kalene C. Yanamura,
Acting Manager,
Transport Airplane Directorate,
Aircraft Certification Service.