National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: February 1, 2017

In reply refer to: A-17-2 and -3

Paulo Cesar de Souza e Silva
President and CEO
Embraer S.A.
Av. Pres. Juscelino Kubitschek, 1909
São Paulo Corporate Towers - Torre Norte
São Paulo SP 04543-907

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. We are providing the following information to urge Embraer to take action on the safety recommendations being issued in this letter.

On January 26, 2017, we adopted our safety recommendation report concerning uncommanded nosewheel steering anomalies during landing in Embraer EMB-145 regional jets. Additional information may be found in the safety recommendation report, which can be accessed at our website (www.ntsb.gov) under report number ASR-17-02.

As a result, we issued five new recommendations, including three to the Federal Aviation Administration and the following two recommendations to Embraer:

A-17-2

In cooperation with Parker Aerospace and Woodward HRT, study and revise the acceptance test procedures for the nosewheel steering manifold assembly and electrohydraulic servo valve on Embraer EMB-135, EMB-140, and EMB-145 aircraft to adequately identify any foreign object debris that may be present.

A-17-3

Issue an operations bulletin informing your operators that the use of binder brackets to hold chart binders is not approved by Embraer and could cause a hazardous condition if a binder becomes dislodged from the bracket.

Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in these recommendations.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement them. When replying, please refer to the safety recommendations by number. We encourage you to submit your response electronically to correspondence@ntsb.gov. If it exceeds 10 megabytes, including attachments, please e-mail us at the same address for instructions. Please do not submit both an electronic copy and a hard copy of the same response.

[Original Signed]

By: Christopher A. Hart,
Chairman

National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: February 1, 2017

In reply refer to: A-17-4 through -6

The Honorable Michael P. Huerta
Administrator
Federal Aviation Administration
Washington, DC 20590

On January 26, 2017, the National Transportation Safety Board (NTSB) adopted our safety recommendation report concerning uncommanded nosewheel steering anomalies during landing in Embraer EMB-145 regional jets. Additional information may be found in the safety recommendation report, which can be accessed at our website (www.ntsb.gov) under report number ASR-17-02.

As a result, we issued five new recommendations, including two to Embraer and the following three recommendations to the Federal Aviation Administration:

A-17-4

> (1) Review Woodward HRT's manufacturing process and quality control program for the electrohydraulic servo valve and require improvements to eliminate manufacturing or assembly errors and nonconformances that could cause uncommanded nosewheel steering anomalies in Embraer EMB-135, EMB-140, and EMB-145 aircraft; and (2) monitor and verify the effectiveness of any improvements.

A-17-5

> After Embraer issues the operations bulletin as recommended in Safety Recommendation A-17-3, notify operators of Embraer aircraft that the use of binder brackets to hold chart binders could cause a hazardous condition if a binder becomes dislodged from the bracket and encourage operators to comply with the Embraer operations bulletin.

A-17-6

Require operators of Embraer EMB-135, EMB-140, and EMB-145 airplanes to incorporate training for uncommanded swerving on landing in their initial and recurrent simulator training programs.

Chairman HART, Vice Chairman DINH-ZARR, and Members SUMWALT and WEENER concurred in these recommendations.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days, as required by 49 *United States Code* section 1135, detailing the actions you have taken or intend to take to implement them. When replying, please refer to the safety recommendations by number and submit your response electronically to correspondence@ntsb.gov.

[Original Signed]

By: Christopher A. Hart,
Chairman