

January 29, 2020

Mr. José Ricardo Pataro Botelho de Queiroz  
Director-President  
National Civil Aviation Agency of Brazil  
Brasilia, Brazil

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.

The attached letter from the NTSB Chairman provides information about the NTSB's January 16, 2020, report *Reported Flight Control System Difficulty on Embraer EMB-175*, NTSB/ASR-20-01. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>. For more information about NTSB and our recommendation process, please see the attached one-page summary.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (for example, A-20-1 through -6). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

All communications regarding safety recommendations will be stored by the NTSB and viewable by the public. Please do not send privileged or confidential communications in response to this/these recommendation(s). Responses marked as confidential or privileged (or similar designations) will be considered nonresponsive. If you have concerns about this protocol, please contact us at [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov) or call (202) 314-6290 and ask to be directed to the Safety Recommendations Division.



Executive Secretariat-crb  
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National Transportation Safety Board  
490 L'Enfant Plaza SW  
Washington, DC 20594

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Office of the Chairman

# National Transportation Safety Board

Washington, DC 20594

January 29, 2020

Mr. José Ricardo Pataro Botelho de Queiroz  
Director-President  
National Civil Aviation Agency of Brazil  
Brasilia, Brazil

Dear Director-President Queiroz:

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 assist victims and their family members affected by major transportation disasters.

We are providing the following information to urge the National Civil Aviation Agency of Brazil (ANAC) to act on the safety recommendations in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter also includes information about the NTSB's January 16, 2020, report, *Reported Flight Control System Difficulty on Embraer EMB-175*, NTSB/ASR-20-01. The preliminary findings of this ongoing incident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of our preliminary findings in this ongoing investigation, we identified the following safety issues:

- Chafing of pitch trim system switch wiring.
- Lack of a requirement to incorporate service bulletins intended to prevent the inverted installation of pitch trim switches on EMB-170/175/190/195/Lineage 1000 series airplanes.
- Potential limitations in the checklist memory items addressing pitch trim runaway.

Accordingly, the NTSB makes the following safety recommendations to ANAC:

Require Embraer to develop instructions for operators of Embraer EMB-170/175/190/195/Lineage 1000 series airplanes to inspect the wiring in the captain's and first officer's control columns for damage, replace where needed, and ensure proper clearance from adjacent components, including the forward mechanical stop bolt and its safety wire. (A-20-1)

Once Embraer develops inspection instructions for the wiring in the captain's and first officer's control columns as requested in Safety Recommendation A-20-1, require operators of Embraer EMB-170/175/190/195/Lineage 1000 series airplanes to inspect that wiring for damage, in compliance with Embraer's instructions, replace where needed, and ensure proper clearance from adjacent components, including the forward mechanical stop bolt and its safety wire. (A-20-2)

Once inspections are completed as outlined in the instructions developed in response to Safety Recommendation A-20-1, require Embraer to review the inspection results and revise design and maintenance documentation for Embraer EMB-170/175/190/195/Lineage 1000 series airplanes as necessary to prevent any hazards identified during the inspections. (A-20-3)

Once Embraer revises design and maintenance documentation for Embraer EMB-170/175/190/195/Lineage 1000 series airplanes as requested in Safety Recommendation A-20-3, require operators of these airplanes to incorporate these changes. (A-20-4)

Mandate the incorporation of Embraer Service Bulletins (SB) 170-27-0051, 190-27-0039, and 190LIN-27-0019 on all applicable airplanes, as specified in the SBs. (A-20-5)

In coordination with the Federal Aviation Administration, Embraer, and US operators, determine if changes to the Embraer EMB-170/175/190/195/Lineage 1000 series airplane Pitch Trim Runaway checklists are required to adequately address all potential trim system failures, and make such changes as necessary. (A-20-6)

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations A-20-1 through -6). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

All communications regarding safety recommendations are stored by the NTSB and viewable by the public. Please do not send privileged or confidential communications in response to this/these recommendation(s). Responses marked as confidential or privileged (or similar designations) will be considered nonresponsive. In the likely event that your organization uses auto-generated and/or preformatted confidentiality statements on letterhead or outgoing e-mails, please include a statement in your letter indicating that the information can be publicly released. If you have concerns about this protocol, please contact us at [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov) or call (202) 314-6290 and ask to be directed to the Safety Recommendations Division.

Sincerely,

[Original Signed]

Robert L. Sumwalt, III  
Chairman

Enclosures

cc: Fernando Motta Assis de Lacerda

January 29, 2020

The Honorable Stephen Dickson  
Administrator  
Federal Aviation Administration  
Washington, DC 20591

The attached letter from the NTSB Chairman provides information about the NTSB's January 16, 2020, report *Reported Flight Control System Difficulty on Embraer EMB-175*, NTSB/ASR-20-01. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (for example, A-20-7 through -10). We encourage you to submit your response to [ExecutiveSecretariat@nts.gov](mailto:ExecutiveSecretariat@nts.gov). If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.



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Office of the Chairman

# National Transportation Safety Board

Washington, DC 20594

January 29, 2020

The Honorable Stephen Dickson  
Administrator  
Federal Aviation Administration  
Washington, DC 20591

Dear Administrator Dickson:

This letter provides information about the National Transportation Safety Board's (NTSB) January 16, 2020, report, *Reported Flight Control System Difficulty on Embraer EMB-175*, NTSB/ASR-20-01. The preliminary findings of this ongoing incident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of our preliminary findings in this ongoing investigation, we identified the following safety issues:

- Chafing of pitch trim system switch wiring.
- Lack of a requirement to incorporate service bulletins intended to prevent the inverted installation of pitch trim switches on EMB-170/175/190/195/Lineage 1000 series airplanes.
- Potential limitations in the checklist memory items addressing pitch trim runaway.

Accordingly, the NTSB makes the following safety recommendations to the Federal Aviation Administration:

Once Embraer develops inspection instructions for the wiring on the captain's and first officer's control columns as requested in Safety Recommendation A-20-1, require operators of Embraer EMB-170/175/190/195/Lineage 1000 series airplanes to inspect that wiring for damage, in compliance with Embraer's instructions, replace where needed, and ensure proper clearance from adjacent components, including the forward mechanical stop bolt and its safety wire. (A-20-7)<sup>1</sup>

Once Embraer revises design and maintenance documentation for Embraer EMB-170/175/190/195/Lineage 1000 series airplanes as requested in Safety Recommendation A-20-3, require operators of these airplanes to incorporate these changes. (A-20-8)

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<sup>1</sup> The NTSB issued Safety Recommendations A-20-1 through -6 to the National Civil Aviation Agency of Brazil.

Mandate the incorporation of Embraer Service Bulletins (SB) 170-27-0051, 190-27-0039, and 190LIN-27-0019 on all applicable airplanes, as specified in the SBs. (A-20-9)

In coordination with the National Civil Aviation Agency of Brazil, Embraer, and US operators, determine if changes to the Embraer EMB-170/175/190/195/Lineage 1000 series airplane Pitch Trim Runaway checklists are required to adequately address all potential trim system failures, and make such changes as necessary. (A-20-10)

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations A-20-7 through -10). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, 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.

Sincerely,

[Original Signed]

Robert L. Sumwalt, III  
Chairman

Enclosure

cc: Mr. Patrich Lusch  
FAA Party Coordinator



# NTSB Recommendations and You

The National Transportation Safety Board (NTSB) is an independent federal agency charged with investigating and determining the probable cause of transportation accidents. We do not make regulations, but we do issue recommendations to organizations such as yours when we discover shortcomings in the transportation system that increase the risk of accidents. **As a result of our investigative activities, we have issued one or more safety recommendations that we believe you can act on to improve transportation safety.**

## Why did the NTSB issue my organization a safety recommendation?

We issue safety recommendations to organizations that can bring about change to reduce the risk of accidents, either through their direct role in the transportation industry, their legislative or regulatory authority, or the significant influence they have among others in the industry. We believe your organization is able to make or influence such changes.

## What does the NTSB expect of safety recommendation recipients?

First and foremost, we encourage you to promptly take the recommended action to improve safety. Because we're eager to see recommendations implemented before more accidents occur, we follow recipients' efforts to implement each recommendation. We ask that you update us any time you achieve a significant milestone in your progress toward implementing the attached recommendation(s), or at least annually. We will provide feedback on your efforts by classifying each recommendation as open or closed, acceptable or unacceptable.<sup>1</sup> Information about your actions associated with your recommendation(s) is available at our [website](#) so that the public can see our combined efforts to improve transportation safety.

<sup>1</sup> For a full description of our safety recommendation classifications, see the [Status Explanation](#) page on our website.

## What should our response to the NTSB include?

Please respond to us within **90 days (30 for urgent recommendations)** explaining the specific actions you have taken or intend to take in response to the safety recommendation(s), and propose a timeline for completion. We understand organizations today are faced with competing priorities and limited resources, which can make implementing our recommendations a challenge. If, for any reason, you are not able to take the recommended action, or if you believe an alternate action would be more appropriate for your organization, please explain why. When you respond, please provide an e-mail address for future communications. We will review your response and provide feedback.

## What if my organization doesn't believe the recommended action is the best way to improve safety?

We base our recommendations on the evidence, facts, and circumstances of the accidents we investigate. Sometimes industry leaders identify ways to attain the same safety objective more efficiently, and we encourage recipients to share their ideas with us. In these cases, we will evaluate the alternate means of achieving the safety objective and provide feedback. We believe safety is a collaborative effort, and we're happy to work with your organization to set goals and make improvements.

## Why does the NTSB expect us to take action, even though our organization wasn't responsible for the accident that resulted in the safety recommendation?

Our goal is to prevent accidents. Often, the factors we identify as causing or contributing to an accident are not unique—they represent common practices or situations that may be accidents waiting to happen. In such instances, we may make recommendations intended to raise the minimum standard for safety throughout the industry.

## How do we contact the NTSB to provide updates or obtain further information?

Please contact us electronically at [executivesecretariat@ntsb.gov](mailto:executivesecretariat@ntsb.gov). If you wish to send us supporting documentation that, with your response, exceeds 10 megabytes, please contact us at the same e-mail address for instructions.

You can also reach our Safety Recommendations staff at **(202) 314-6290** (please ask to be directed to the Safety Recommendations Division).

**NTSB** | National  
Transportation  
Safety Board  
[www.ntsb.gov](http://www.ntsb.gov)

***We look forward to working with you to prevent accidents and save lives!***