

September 26, 2024

Ms. Stephanie Pope  
Chief Operating Officer  
The Boeing Company  
Executive Vice President  
President and CEO  
Boeing Commercial Airplanes

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable cause of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for any accident or event investigated by the agency. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The attached letter from the NTSB Chair provides information about the NTSB's report *Mitigate Safety Concerns Involving Boeing 737 Airplanes with Collins Aerospace SVO-730 Rudder Rollout Guidance Actuators* (AIR-24-06). The details of this accident investigation and the resulting urgent safety recommendation 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 30 days of the date of this letter detailing the actions you have taken or intend to take to implement these urgent recommendations. When replying, please refer to the safety recommendation by number (for example, A-24-27 and A-24-28). 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.

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 recommendation. 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).



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NTSB Executive Secretariat-LRM  
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National Transportation Safety Board  
490 L'Enfant Plaza SW  
Washington, DC 20594  
Email: [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov)

# National Transportation Safety Board

Office of the Chair

Washington, DC 20594



September 26, 2024

Ms. Stephanie Pope  
Chief Operating Officer  
The Boeing Company  
Executive Vice President  
President and CEO  
Boeing Commercial Airplanes

Dear Ms. Pope:

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 events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

We are providing the following information to urge The Boeing Company to act on the safety recommendations in this letter because we believe your organization can help reduce the risk of future accidents.

This letter also includes information about our September 26, 2024, report *Mitigate Safety Concerns Involving Boeing 737 Airplanes with Collins Aerospace SVO-730 Rudder Rollout Guidance Actuators* (NTSB/AIR-24-06). The details of this ongoing incident investigation and the resulting urgent safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of the NTSB's preliminary findings in this investigation, we identified the following safety issues:

- the potential for jammed or restricted rudder systems on Boeing 737NG and 737MAX airplanes due to incorrectly assembled Collins Aerospace SVO-730 rudder rollout guidance actuators that allow moisture to accumulate and freeze;
- the potential for uninformed flight crews of affected Boeing 737NG and 737MAX airplanes to apply rudder pedal force in an attempt to clear a jammed or restricted rudder control system but that also results in a large, sudden, and undesired input to the rudder and loss of airplane control; and
- the need to determine and disseminate guidance on appropriate flight crew responses if the affected Collins actuators on Boeing 737NG and 737MAX airplanes become jammed or restricted in flight or during landing.

Accordingly, the NTSB makes the following urgent safety recommendations to The Boeing Company:

- Instruct operators of Boeing 737NG and 737MAX airplanes with Collins Aerospace SVO-730 rudder rollout guidance actuators with incorrectly assembled bearings to notify flight crews that the rudder control system might become jammed or restricted in flight or during landing due to moisture that could accumulate and freeze in the actuators.  
(A-24-27) (Urgent)
- For 737NG and 737MAX airplanes with Collins Aerospace SVO-730 rudder rollout guidance actuators with incorrectly assembled bearings, determine appropriate flight crew responses, besides applying maximum rudder pedal force, if the condition described in Safety Recommendation A-24-27 were encountered in flight or during landing and then notify operators to disseminate this information to flight crews of these airplanes.  
(A-24-28) (Urgent)

The NTSB is vitally interested in these urgent recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 30 days of the date of this letter, detailing the actions you have taken or intend to take to implement these urgent recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations A-24-27 and A-24-28). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). For your convenience, please refer to additional [guidance on responding to our safety recommendations](#) on our website.

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 these recommendations. Responses marked as confidential or privileged (or similar designations) will be considered nonresponsive. In the likely event that your company 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).

Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

cc: Ms. Stella Weidner  
Director of Product Safety and Investigations  
Boeing Commercial Airplanes

Mr. Tom Galantowicz  
Vice President of Product and Services Safety  
The Boeing Company

Ms. Elisabeth Martin  
Vice President of Enterprise Safety and Mission Assurance  
The Boeing Company

Mr. Eric East  
Associate Technical Fellow  
Air Safety Investigations  
Boeing Commercial Airplanes

September 26, 2024

The Honorable Michael G. Whitaker  
Administrator  
Federal Aviation Administration  
Washington, DC 20591

The attached letter from the NTSB Chair provides information about the *Mitigate Safety Concerns Involving Boeing 737 Airplanes with Collins Aerospace SVO-730 Rudder Rollout Guidance Actuators* (AIR-24-06). 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 30 days of the date of this letter detailing the actions you have taken or intend to take to implement these urgent recommendations. When replying, please refer to the safety recommendations by number (for example, A-24-29 and A-24-30). 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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# National Transportation Safety Board

Office of the Chair

Washington, DC 20594



September 26, 2024

The Honorable Michael G. Whitaker  
Administrator  
Federal Aviation Administration  
Washington, DC 20591

Dear Administrator Whitaker:

This letter provides information about the National Transportation Safety Board's (NTSB) September 26, 2024, report *Mitigate Safety Concerns Involving Boeing 737 Airplanes with Collins Aerospace SVO-730 Rudder Rollout Guidance Actuators* (NTSB/AIR-24-06). The details of this ongoing incident investigation and the resulting urgent safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of the NTSB's preliminary findings in this investigation, we identified the following safety issues:

- the potential for jammed or restricted rudder systems on Boeing 737NG and 737MAX airplanes due to incorrectly assembled Collins Aerospace SVO-730 rudder rollout guidance actuators that allow moisture to accumulate and freeze;
- the potential for uninformed flight crews of affected Boeing 737NG and 737MAX airplanes to apply rudder pedal force in an attempt to clear a jammed or restricted rudder control system but that also results in a large, sudden, and undesired input to the rudder and loss of airplane control; and
- the need to determine and disseminate guidance on appropriate flight crew responses if the affected Collins actuators on Boeing 737NG and 737MAX airplanes become jammed or restricted in flight or during landing.

Accordingly, the NTSB makes the following urgent safety recommendations to the FAA:

- Determine whether Collins Aerospace SVO-730 rudder rollout guidance actuators with incorrectly assembled bearings should be removed from Boeing 737NG and 737MAX airplanes and, if so, direct US operators to remove the actuators until acceptable replacement actuators become available for installation. (A-24-29) (Urgent)
- If you determine the Collins Aerospace SVO-730 rudder rollout guidance actuators with incorrectly assembled bearings should be removed, notify international regulators that oversee operators of Boeing 737 airplanes about the safety issues involving the SVO-730 rudder rollout guidance actuator and encourage them to require the removal of actuators with incorrectly assembled bearings from 737NG and 737MAX airplanes until an acceptable replacement actuator becomes available for installation. (A-24-30) (Urgent)

The NTSB is vitally interested in these urgent recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 30 days of the date of this letter, detailing the actions you have taken or intend to take to implement these urgent recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations A-24-29 and A-24-30). 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.

Sincerely,

[Original Signed]

Jennifer Homendy  
Chair