

UNITED STATES OF AMERICA
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 12, 1972

Adopted by the NATIONAL TRANSPORTATION SAFETY BOARD
at its office in Washington, D. C.
on the 21st day of June 1972

FORWARDED TO:)
Honorable John H. Shaffer)
Administrator)
Federal Aviation Administration)
Washington, D. C. 20591)

SAFETY RECOMMENDATIONS A-72-106 & 107

The National Transportation Safety Board's investigation of an incident involving a Cessna 310, N3606D, at Peachtree City, Georgia, on August 21, 1971, indicates that corrective action is necessary to reduce the possibility of similar occurrences.

Immediately following takeoff, the pilot experienced a loss of elevator control, but managed to maintain a degree of pitch control by the use of elevator trim and by varying the engine power output; and the aircraft was landed safely.

Investigation by the National Transportation Safety Board disclosed two of the three AN3-7 bolts were missing from the elevator pylon assembly, P/N 0832000-33. This assembly transfers control action from the push-pull rod to the elevator torque tubes. Two of the bolts and metal self-locking nuts were recovered in the aft fuselage. The third bolt was still in place, but loose, and its self-locking nut could be turned easily on and off the bolt by hand. The inner threads on all three bolts showed a wear pattern around the entire bolt circumference.

In April 1971, the elevator had been removed for repair during a 100-hour annual inspection of the aircraft. The aircraft records did not show the repair made to the elevators. At the time of the incident, the aircraft had been flown a total of 69 hours since the inspection.

From the evidence developed during the investigation, the Safety Board has concluded that the loss of elevator control resulted from the failure of maintenance personnel to replace the three worn elevator pylon assembly

bolts at the time of elevator reinstallation. Further, we believe this incident would not have occurred if the maintenance personnel had been required to use new bolts and nuts when replacing critical components.

We recognize that this is not a new problem and that you have been active in alerting maintenance personnel to the potentially catastrophic consequences of improper fastening of critical aircraft parts. Two very similar incidents, involving different aircraft models, were discussed in the August 1966 issue of your General Aviation Inspection Aids Summary, and the importance of primary control system maintenance was emphasized in the maintenance notes section of other monthly issues of the Inspection Aids.

Moreover, we are aware that the subject of aircraft hardware is covered in Chapter 5 of Advisory Circular 43.13-2, although we could find no prohibition against reusing bolts and nuts in critical parts and components. However, in view of the 63 reported discrepancies involving worn, loose, or missing parts on record in your Maintenance Analysis Center at Oklahoma City for the 2-year period from December 1969 to December 1971, it would appear that the general problem is still with us and that more stringent action might be in order.

In assessing the reason the parts security problem seems to be more evident in general aviation aircraft when compared with transport aircraft, we have noted marked difference in the fastener requirements in Parts 23 and 25 of the Federal Aviation Regulations. Specifically, section 25.609 requires two separate locking devices on fasteners used in critical areas. We believe the incorporation of a similar requirement in section 23.607 would contribute materially to the reduction of the discrepancies mentioned above. Additionally, the inclusion of a requirement for the use of new bolts and nuts when reinstalling critical parts and components would provide a further desirable measure of safety.


Accordingly, the Safety Board recommends that the Federal Aviation Administration:

1. Modify section 23.607 to incorporate the provisions set forth in section 25.607.
2. Add a new section (d) in both parts to require the use of new bolts and nuts when critical parts and components are reinstalled or reassembled.

Personnel of our Bureau of Aviation Safety will be pleased to provide any further information or assistance that might be considered desirable.

These recommendations will be released to the public on the issue date shown above. No public dissemination of the contents should be made prior to that date.

Reed, Chairman; McAdams, Thayer, Burgess, and Haley, Members, concurred in the above recommendations.


By: John H. Reed
Chairman