

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

ISSUED: October 5, 1971

Adopted by the NATIONAL TRANSPORTATION SAFETY BOARD
at its office in Washington, D. C.
on the 16th day of September 1971

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

SAFETY RECOMMENDATION A-71-42 thru 45

As a result of an in-flight turbulence encounter involving a Pan American Boeing 747 on February 7, 1971, two passengers and two stewardesses were injured. Our investigation of this incident disclosed certain areas where the injury potential of such encounters could be considerably reduced.

In this incident, the Captain and the Flight Service Director had made announcements that turbulence was expected and that seatbelts should be fastened. Nevertheless, several passengers were unrestrained and two stewardesses were in the process of retrieving service trays when the turbulence was encountered. Although the injuries might have been prevented in this case by better seatbelt discipline on the part of passengers and cabin crewmembers, unexpected turbulence is encountered frequently and the passengers and the cabin crewmembers are caught unprotected. To alleviate injuries in such cases, an alternate means of restraint is necessary. The seats in present day aircraft are padded and free of protuberances which make it difficult to find a firm handhold. Handgrips on the risers of the aisle seats would provide security for persons caught in the aisles during unexpected turbulence.

A second area concerns the cabin interphone system in the Boeing 747. Several handsets were displaced from their cradles because of the turbulence. The stewardess in the rear of the aircraft experienced considerable delay in reaching the Flight Service Director due to the

time limiter circuit in the system, which eliminates "off-hook" stations from the system after 8 seconds. Depending on the number of handsets displaced, a particular station may have to wait as much as 104 seconds to gain a dial tone. This time period may not be of importance during normal operations for intra-cabin communications, but since access to the public address system can be gained only by the same dialing system, the time element may be prohibitive under emergency conditions.

Certification requirements allow a maximum of 90 seconds for the emergency evacuation of an aircraft. If a cabin crewmember cannot gain access to the public address system, critical information could not be relayed to the passengers which could lead to catastrophic results under emergency circumstances. The Board believes that no cabin crewmember should be inhibited from gaining access to the public address system by a design feature of the interphone system.

We have learned, in discussions with some members of your staff concerning these problems, that a regulatory project to require operable public address systems in aircraft operating under FAR Part 121 is in its initial stages at this time. The Board trusts that the limitations discussed herein will be taken into consideration in the preparation of the forthcoming Notice of Proposed Rule Making. However, the Board feels that recommendations 3 and 4, concerning the cabin interphone system and the public address system, should not await the NPRM process but deserve immediate attention. We have learned from technical personnel at Pan American Airways that they are actively contemplating extensive modifications to the systems in their Boeing 747's in order to eliminate the above-cited problems.

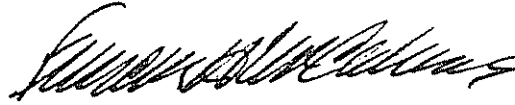
In view of the above, the Board recommends that the Federal Aviation Administration:

1. Explore the feasibility of requiring on a retrofit basis, flexible, noninjurious handholds on the back risers of aisle seats in all transport category aircraft in order to provide an immediate form of restraint for standing persons.
2. Introduce a requirement for such handholds into the Technical Standard Order governing seat design and manufacture.

3. Canvass air carriers to document the service problems found with the cabin interphone system installed in the Boeing 747 with a view to eliminating such conditions as loose and improperly placed handsets, dialing delays, and other system limitations.
4. Require an independent means for access to the public address system at the cabin attendant stations in transport aircraft in general and the Boeing 747 in particular.

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

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



By: Francis H. McAdams
Acting Chairman