



DEPARTMENT OF TRANSPORTATION
NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20591

OFFICE OF MEMBER

March 22, 1974

Honorable Alexander P. Butterfield
Administrator
Federal Aviation Administration
Department of Transportation
Washington, D.C. 20591

Safety Recommendation(s)

A-74-27 thru A-74-29

Dear Mr. Butterfield:

The National Transportation Safety Board has received your letter of March 19, 1974, concerning the action taken by the Federal Aviation Administration intended to assure the integrity of the aft cargo door and its actuating system on the McDonnell-Douglas DC-10 series aircraft.

Concerning implementation of our Safety Recommendation A-72-97, we have reviewed the requirements of your Airworthiness Directive of March 6, 1974. We further note in your letter that this door modification program is the "subject of an immediate FAA regulatory surveillance program"; the FAA is "carrying out DC-10 fleet inspections to ascertain that all carriers are complying in full with instructions and approved procedures." We understand that additional Airworthiness Directives will be issued in the near future.

The telegraphic AD of March 6, 1974, requires immediate modification of all DC-10 cargo doors in accordance with McDonnell-Douglas Service Bulletins 52-27 of May 30, 1972; 52-35 of June 19, 1972; and 52-37 of July 3, 1972, except for those aircraft which have been modified in accordance with McDonnell-Douglas Service Bulletin 52-49 of October 25, 1973. Additionally, the AD requires prior to each flight that a flightcrew member shall check each cargo door for proper security.

Service Bulletins 52-27, -35, and -37 were issued and in existence prior to the release date of July 6, 1972, of the Board's Safety Recommendation A-72-97. In making our recommendation at that time, we stated:

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"We are aware of the inspection procedures currently in effect to ensure safety of operations of the DC-10 as well as the existing safety features of the door design. Nevertheless, in order to preclude the recurrence of similar accidents, the Safety Board recommends that the Federal Aviation Administration:

Require a modification to the DC-10 cargo door locking system to make it physically impossible to position the external locking handle and vent door to their normal door-locked positions unless the locking pins are fully engaged. "

The AD of March 6, 1974, represents the first mandatory action taken by the FAA to treat this cargo door problem. The provisions of that AD will substantially reduce the risks of cargo door failures. Nevertheless, the Board finds that the AD fails to meet the full intent of our Safety Recommendation A-72-97 which was to make it physical' impossible to position the locking handle and vent door unless the locking pins are properly engaged.

We have reviewed the provisions of Service Bulletin 52-49 which provide for the installation of a revised "closed loop" cargo door locking mechanism to eliminate the possibility of the human factor error by ensuring prevention of vent door closure unless the cargo door latches are engaged and locked. The Safety Board believes that modification of the DC-10 cargo doors in accordance with Service Bulletin 52-49 would carry out the intent of our Recommendation A-72-97 by eliminating the human error factor and making it physically impossible to pressurize the aircraft without the locking pins being fully engaged.

Our Safety Recommendation A-72-98 proposed that the FAA:

"... require the installation of relief vents between the cabin and aft cargo compartment to minimize the pressure loading on the cabin flooring in the event of sudden de-pressurization of the cargo compartment. "

In the Board's followup letter to the FAA of February 23, 1973, we stated that:

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"... if complete venting is not possible, partial venting would be beneficial. Such venting could prevent the complete collapse of the aft cabin floor, or it could reduce the amount of floor deflection, and attendant control cable damage in a DC-10."

In this connection we note in your letter that you have had discussions on this subject with McDonnell-Douglas and that the FAA is developing, as soon as practicable, an analysis of all DC-10 design changes which might reasonably be required in the near future.

As a result of our inspection of several DC-10 aircraft recently modified in accordance with the Airworthiness Directive of March 6, 1974, we noted that the cargo door viewing window used for the inspection of lock pin engagement does not provide for adequate visual observation of the area. The positioning of the lock pin is difficult to see, even with the aid of a flashlight. We are of the opinion that the viewing window should be improved and illuminated so as to allow full visual observation of the lock pin area in order to assure positive verification of proper locking pin engagement.

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

1. Require that the provisions of the McDonnell-Douglas Service Bulletin 52-49, entitled "Doors-Cargo-Install Revised 'Closed Loop' Cargo Door Locking Mechanism," be made mandatory by the immediate issuance of an Airworthiness Directive. (A-74-27)
2. Expedite your resolution of the cabin flooring venting problem so as to incorporate the flooring modification by Airworthiness Directives at the earliest practical date. (A-74-28)
3. Amend the Airworthiness Directive of March 6, 1974, to require an improved viewing window and illumination of


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the lock pin area in order to permit full visual observation of the locking mechanism so that positive verification can be made of proper locking pin engagement. (A-74-29)

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



by John H. Reed
Chairman