

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

FOR RELEASE: 6:30 A.M., E.S.T., MARCH 31, 1976

(202) 426-8787

ISSUED: March 31, 1976

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Forwarded to:

Honorable John L. McLucas  
Administrator  
Federal Aviation Administration  
Washington, D. C. 20591  
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SAFETY RECOMMENDATION(S)

A-76-58

The National Transportation Safety Board has reviewed several recent air traffic control (ATC) related accidents and incidents and has determined that deficiencies in human performance were critical causal factors. The individual controller's susceptibility to error, despite sophisticated electronic equipment available to him, detracts from the overall benefits achievable through advanced automation in the National Airspace System.

On November 26, 1975, an American Airlines Douglas DC-10 and a Trans World Airlines Lockheed L-1011 almost collided head-on in midair near Carleton, Michigan. A radar controller who was aware of a potential traffic conflict failed to monitor their progress sufficiently to avert the conflict. An evasive maneuver resulted in injuries to several persons on board the DC-10.

On December 5, 1975, a United Air Lines Boeing 727 and a Trans World Airlines Boeing 727 passed about 100 feet from one another when a radar controller failed to notice that one airplane was overtaking the other at the same altitude. The near collision occurred about 60 miles northeast of Chicago, Illinois.

Again on December 5, 1975, a North Central Airlines Convair 580 and a Cessna 421 nearly collided in midair near Jonesville, Wisconsin. When two radar controllers failed to coordinate their control activities, the Cessna 421 was vectored through holding-pattern airspace which was occupied by the Convair 580.

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On December 12, 1975, an Eastern Air Lines Boeing 727 and an Air National Guard F-101 passed in midair within 100 feet of each other near Richmond, Virginia. Two radar controllers agreed to allow both planes to fly at the same altitude and intended to change the altitude of the military airplane before flightpaths of the two planes crossed. However, communications with the military airplane were lost temporarily.

Common to these occurrences were the facts that all sector or control positions were staffed by experienced controllers, and the ATC facilities employed automated radar systems. These circumstances suggest that the sophistication of ATC equipment does not obviate the system's dependency on a high level of human performance.

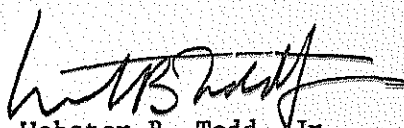
Equipment design innovations are intended to unburden the controller from ancillary tasks and to enhance his ability to fulfill his role as a vital functional element of the ATC System. However, the Board believes that controllers and FAA management must recognize that sophisticated electronic equipment is no substitute for constant vigilance, sound judgment, and proven control techniques.

Accordingly, we believe that the FAA must undertake a program to identify those aspects of controller performance which are most likely to result in potentially critical control errors and then implement safeguards so that the system can tolerate a reasonable residual of error in human performance without jeopardizing safety.

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

Conduct a comprehensive study of the human failure aspects of air traffic control system errors that have occurred since the introduction of terminal and en route automation and take action to make the National Airspace System less vulnerable to the human failure element, either by changes in procedures, training, supervision, performance monitoring, and selection standards, or by providing increased redundancy in the man-machine relationship.  
(Class II - Priority followup)

TODD, Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendation.

  
By: Webster B. Todd, Jr.  
Chairman

THIS RECOMMENDATION WILL BE RELEASED TO THE PUBLIC ON THE ISSUE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THIS DOCUMENT SHOULD BE MADE PRIOR TO THAT DATE.