

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: October 14, 1981

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Forwarded to:

Honorable J. Lynn Helms  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-81-145 through -147

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On August 18, 1981, the National Transportation Safety Board began a special investigation of the air traffic control (ATC) system of the United States. A major issue in our investigation is the Federal Aviation Administration's (FAA) program to monitor the emergence of fatigue and stress in individual controllers which may result from the extended work hours and the heavier workloads encountered by controllers since the onset of the Professional Air Traffic Controllers Organization (PATCO) strike of August 3, 1981.

The Safety Board's review of ATC surveillance reports submitted by FAA General Aviation and Flight Standards District Office inspectors to FAA management indicated that there currently is no evidence that fatigue and stress problems have emerged among the controllers. However, these reports indicate that some controllers are apprehensive that the extended work hours and heavier workloads will produce fatigue and stress in the future. During the ongoing Safety Board survey of more than 41 air traffic facilities, investigators have interviewed nearly 200 of the controllers and supervisors now operating the system. Most of these individuals have stated that fatigue and stress have not emerged as significant problems. These controllers have also stated that the general spirit of user cooperation, teamwork, and a sense of job accomplishment has produced an emotional uplift which has offset the effects of extended work hours. However, there was a pervasive feeling on their part that the uplift is likely to be short-term and that fatigue and stress might affect their performance in the future. Many of the controllers stated that the extended work week had disrupted their personal lives.

The Safety Board is concerned that the long-term effects of the current work schedules will lead to fatigue and stress which may eventually degrade controller efficiency and aviation safety. Based on our investigators discussions with the Federal Air Surgeon and management officials of FAA's Air Traffic Service, we have determined that no national or regional guidelines have been disseminated by the FAA to ATC facilities to assist first-line supervisors in detecting the emergence of fatigue and stress. To forestall any adverse effect on aviation safety the Safety Board believes that an appropriate fatigue/stress detection program should be initiated in each air traffic facility. In order for such a program to be effective, all ATC supervisory personnel should be instructed to recognize the early warning signs of fatigue and stress. We believe that a program to this end should receive a high priority.

The FAA's flow control procedures were instituted to insure a continual metering of traffic and, in turn, to preclude overloads of the ATC system. Flow control has generally served its purpose with respect to scheduled air carrier, air taxi, and most IFR operations, although recurrent traffic peaking problems continue to arise. Overall, our investigators' observations at many facilities, as well as interviews with controllers and a review of facility traffic counts, indicate that since the end of August controller workload has increased significantly. Currently the controller workloads appear to be manageable, but they are approaching levels where individuals and facilities are reaching the saturation level. This traffic increase is not primarily the result of inadequate flow control procedures, but rather is attributable to a combination of increases in flow-controlled IFR traffic, increases in VFR transient traffic, and the provision of additional air traffic services to VFR flights. At the Denver Tower, by September 1 the daily traffic count had sometimes reached levels which were about 94 percent of prestrike levels, although the total number of working controllers was 60 percent of prestrike levels. Atlanta ARTCC handled about 93 percent of prestrike operations during August, 1981, with about 55 percent of the previous controller workforce. Additionally, high traffic counts were noted at other facilities despite the reduced controller staff levels. Moreover, some general aviation pilots apparently have circumvented the ATC system traffic restrictions by using the special air taxi suffix "TN" in their flight plans. Illustrative of the problem is an FAA report that in August the Minneapolis Air Traffic Control Center (ARTCC) had 5,300 air taxi operations, while in July there had been only 4,400 air taxi operations.

The Safety Board realizes that it is possible to handle a large number of aircraft if the flights are spread over a period of time. However, our investigators observed that many controllers were increasing their workloads by volunteering additional services or by accepting VFR transient aircraft at high density airports. Although a helpful attitude on the part of individual controllers results in more services to more pilots, there is evidence that individual controllers may fail to understand the effects of the additional workload on controllers in adjoining sectors or on the facility and national flow control procedures. As a result, the good intentions of the controller workforce may tend to reduce the effectiveness and safety of the flow control concept and to overtax the current ATC system. Of course this additional workload may have both short- and long-range effects on controller fatigue and stress.

The Safety Board is aware that the FAA is maintaining close surveillance of its flow control procedures. The recently announced FAA program will reduce scheduled commercial operations, from 83 percent of scheduled operations to 78 percent, and the General Aviation Reservation Program will limit the overall increases in total traffic count. These programs will enable the ATC system to manage flow-controlled air traffic without saturating individual controllers or facilities, while providing a margin to accommodate unforecast traffic peaks. However, our investigation suggests that localized VFR traffic and nonscheduled IFR operations have led to increases in controller workload which have not received comparable attention. As a result, we believe that the current program to reduce flow-controlled traffic should also include controls of VFR and nonscheduled IFR traffic at various facilities. Finally, future programmed increases in the total volume of air traffic operations must more closely consider controller workforce capabilities.

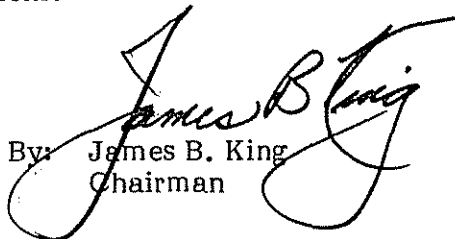
A second major issue in our special investigation was the nature of the ongoing supervision of controllers. Specific supervisory procedures are outlined in individual facility orders. The FAA Facility Operation and Administration Manual underscores the importance of providing supervision at the first-line level, even when a supervisor may be performing controller duties. Our investigators observed several instances where during periods of heavy traffic workload first-line supervisors were assigned duties in

a sector or an operating position in addition to supervisory duties. The Safety Board recognizes the reasons for this practice and believes it is acceptable under certain traffic conditions. However, it can reduce the effectiveness of first-line supervision during heavy workload conditions unless appropriate procedures exist to provide assistance to the supervisor/controller. Such a situation arose during the investigation when our investigators observed a first-line supervisor who was also working a control position which had a heavy traffic load. The supervisor was unable to perform supervisory duties, and there was no other person in the area to provide assistance or backup supervision. When the traffic load forced the supervisor/controller to request controller assistance at his position, 4 minutes elapsed before another controller was able to assist him. Procedures for having first-line supervision immediately available for assistance and coordination are critical to the air traffic system, and must be a part of each facility's planning .

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

- ✓ Establish and implement a program to detect the onset of, and to alleviate, controller fatigue and stress. (Class II, Priority Action) (A-81-145)
- ✓ In addition to recent efforts to reduce scheduled IFR traffic now operating under national flow controls, implement additional controls both at the national and facility levels which will reduce controller and facility workloads by limiting nonscheduled IFR operations and air traffic control and discretionary services being provided to VFR operations. (Class I, Urgent Action) (A-81-146)
- ✓ Require that, at any time that a first-line supervisor is to work a control position in addition to performing supervisory duties, a procedure is in place at the facility through which qualified personnel are immediately available for assistance or coordination. (Class II, Priority Action) (A-81-147)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations.

By:   
James B. King  
Chairman