NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: April 18, 1974

Forwarded to:

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

SAFETY RECOMMENDATION(S)

A-74-12 thru 14

On July 23, 1973, an Ozark Airlines Fairchild Hiller FH-227B was involved in an accident at St. Louis, Missouri. The National Transportation Safety Board's investigation of the accident revealed three safety items which warrant corrective action.

First, until just before the accident, air traffic controllers at St. Louis issued clearances for approaches and landings, despite the thunderstorms which were over the initial approach path, the final approach path, and the airport. Immediately before the accident, the local controller stopped issuing departure clearances. Although the controller did not have authority to stop departures because of the weather, the Safety Board believes that he acted in the best interest of safety. It further believes that, in conditions they deem hazardous, controllers should be given the authority to deny (1) approach and landing clearances when thunderstorm activity exists over either the approach path or the airport and (2) departure clearances when thunderstorm activity exists over either the airport or the departure path. This new authority would make more effective use of the wealth of terminal weather information available to the controller, specifically:

a. His direct and continuing visual observation of local atmospheric conditions and associated aircraft behavior.

b. His receipt and evaluation of pilot reports (PIREP's) regarding flight conditions in the terminal area.

c. The informative capacity of ground-based radar.

d. The direct links for transmission of terminal weather reports between the National Weather Service and ATC.

Since 1963, accidents in which thunderstorm activity was a factor have caused over 100 deaths, 40 serious injuries, and millions of dollars in property damage. Among these accidents are the following:

American Airlines, Knoxville, Tenn., 1962
Mohawk Airlines, Rochester, N.Y., 1963
American Airlines, New York, N.Y., 1964
DH-125, Paducah, Ky., 1966
Grumman TBM, Elko, Nev., 1966
Lockheed PV-1, Philadelphia, Pa., 1971
Eastern Air Lines, Ft. Lauderdale, Fla., 1972
National Airlines, New Orleans, La., 1972
Convair 990, Agana, Guam, 1973

Second, just before the accident in St. Louis, through the use of radar incapable of displaying different levels of precipitation echo intensity, controllers vectored several aircraft through a solid squall line which contained severe thunderstorm and tornado activity. The controllers vectored the aircraft through the narrowest portion of the precipitation echo pattern displayed on the radarscope in order to get the aircraft to a final approach course. In our opinion, this was a very dangerous practice because the controller's radarscope display did not indicate whether the line of echoes contained a severe thunderstorm or tornado. The Safety Board believes that radar capable of locating severe weather and displaying convective turbulence should be developed for and used in the terminal areas.

Third, the Safety Board learned that the tower and approach control facility at St. Louis has no system by which to relay severe thunderstorm warning bulletins to inbound and outbound flights when the terminal area is included in such bulletins. The lack of such a system was not a factor in this accident, because the severe thunderstorm warning bulletin which had been issued about 3 minutes before the accident by the National Weather Service, was not relayed to the tower and approach control until after the accident. Nevertheless, the Safety Board believes that the information contained in these bulletins is vital to every pilot who must decide whether to fly into or out of a terminal area which is affected by thunderstorm activity. We also believe that these bulletins should be relayed expeditiously.

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

1. Revise terminal air traffic control procedures to authorize controllers, when they deem an operational hazard is present, to deny (1) approach and landing clearances when thunderstorm

activity exists over either the approach path or the airport, and (2) takeoff clearances when thunderstorm activity exists over either the airport or the departure path.

2. Develop and install terminal air traffic control radar capable of locating severe weather and displaying convective turbulence. This radar should be used to vector aircraft around severe weather.

3. Implement, in cooperation with the National Weather Service, a system to relay severe thunderstorm and tornado warning bulletins expeditiously to inbound and outbound flights when such bulletins include the terminal area.

Members of our Bureau of Aviation Safety will be available for consultation if desired.

REED, Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendations.

By: John H. Reed
Chairman