

**NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.**

ISSUED: September 27, 1977

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Forwarded to:

Honorable Langhorne M. Bond  
Administrator  
Federal Aviation Administration  
Washington, D. C. 20591

SAFETY RECOMMENDATION(S)

A-77-63 and 64

On April 4, 1977, Southern Airways, Inc., Flight 242, a DC-9-31, crashed at New Hope, Georgia, as its crew attempted an emergency landing on a highway; 70 persons died and 24 persons were injured as a result. The National Transportation Safety Board's investigation disclosed that the flight had entered a relatively small precipitation area classified by the National Weather Service (NWS) as intense, or level-5. This small intense area was part of a considerably larger area of lesser intensities. By the time the flight had left this small intense area, the level had risen to a level-6, the highest level currently used by NWS. The Board believes that had this intense area been identified adequately and in real-time to both the pilot and controller, the flightpath of Flight 242 might have differed from that actually flown.

As a result of the Ozark Airlines' accident at St. Louis, Mo., in 1973, the Safety Board recommended that the Federal Aviation Administration, "Develop and install terminal air traffic control radar capable of locating severe weather and displaying convective turbulence." Also, as a result of the Eastern Air Lines' accident, at Jamaica, N.Y., in 1975, the Safety Board recommended that the FAA, "Conduct a research program to define and classify the level of flight hazard of thunderstorms using specific criteria for the severity of a thunderstorm and the magnitude of change of the wind speed components measured as a function of distance along an airplane's departure or approach flight track and establish operational limitations based upon these criteria." Although the Southern Airways jet did not encounter severe weather in terminal airspace, the Board believes that the concept of the above recommendations should be pursued with the inclusion of en route airspace as well.

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The Safety Board is aware of various project reports prepared for the FAA which demonstrate that real-time classifications of the severity of precipitation areas could be displayed via air traffic control radar. Also, during its recent public hearing into the Southern Airways accident, the use of pulse doppler techniques for turbulence detection was discussed. The Safety Board believes that the technology is available for providing this critical information, and that these concepts must be made an operational reality as soon as possible.

The Safety Board also believes that this information should be transmitted to the flightcrew so that effective and timely decisions can be made. Testimony received at the public hearing for the Southern Airways accident revealed that the Beacon Collision Avoidance System would use a data link and that this same system could be made available for the transmission of an automatic display of weather information to the pilot.

As a more immediate remedial measure, the Board believes that the dimensioning of thunderstorm precipitation intensity in terms of a common language should be accomplished and promoted throughout government and industry. The National Weather Service (NWS) has established a six-level scale based on the strength of the received radar signal which has been related to precipitation intensity and thus to thunderstorm intensity. The system is in use with NWS ground-based weather radars and observations made by these radars are transmitted to aviation interests in the six-level terminology.

The Safety Board believes that the NWS six-level scale should be adopted as a standard of description of thunderstorm intensity, and that this would be of use with severe weather forecasts, ground observations, and pilot reports; and thus would provide pilots with a clearer picture of potential and actual thunderstorm activity. Pilots could also benefit by the use of this standard if used as a reference for the capability of their present-day airborne radar.

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

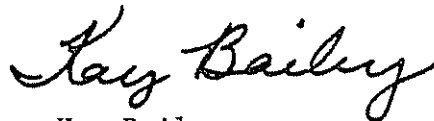
Expedite the development and implementation of an aviation weather subsystem for both en route and terminal area environments, which is capable of providing a real-time display of either precipitation or turbulence, or both and which includes a multiple-intensity classification scheme. Transmit this information to pilots either via the controller as a safety advisory or via an electronic data link.  
(Class II-Priority Followup) (A-77-63)

Honorable Langhorne M. Bond

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Establish a standard scale of thunderstorm intensity based on the NWS' six-level scale and promote its widespread use as a common language to describe thunderstorm precipitation intensity. Additionally, indoctrinate pilots and air traffic control personnel in the use of this system. (Class II-Priority Followup) (A-77-64)

BAILEY, Acting Chairman, McADAMS, HOGUE and HALEY, Members concurred in the above recommendations.

A handwritten signature in cursive script that reads "Kay Bailey".

By: Kay Bailey  
Acting Chairman

