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National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: June 27, 1988

In reply refer to: A-88-71

All Part 121 Air Carriers
(See Distribution List)

About 2046 eastern daylight time on August 16, 1987, Northwest Airlines, Inc., flight 255 crashed shortly after taking off from runway 3 center at the Detroit Metropolitan Wayne County Airport (Detroit Metro), Romulus, Michigan. Flight 255, a McDonnell Douglas DC-9-82, U.S. Registry N312RC, was a regularly scheduled passenger flight and was en route to Phoenix, Arizona. According to witnesses, flight 255 began its takeoff rotation about 1,200 to 1,500 feet from the end of the runway and lifted off near the end of the runway. After liftoff, the wings of the airplane rolled to the left and the right about 35° in each direction. The airplane collided with obstacles northeast of the runway when the left wing struck a light pole located 2,760 feet beyond the end of the runway. Thereafter the airplane struck other light poles, the roof of a rental car facility, and then the ground. It continued to slide along a path aligned generally with the extended centerline of the takeoff runway. The airplane broke up as it slid across the ground and postimpact fires erupted along the wreckage path. Three occupied vehicles on a road adjacent to the airport and numerous vacant vehicles in a rental car parking lot along the airplane's path were destroyed by impact forces and/or fire. Of the persons on board flight 255, 148 passengers and 6 crewmembers were killed; 1 passenger, a 4-year-old child, was injured seriously. On the ground, two persons were killed, one person was injured seriously, and four persons suffered minor injuries. ^{1/}

The National Transportation Safety Board notes that both crewmembers received single-crewmember training during their last simulator training and proficiency checks. When such training is performed, the instructor occupies the other pilot seat and also operates the simulator. The Safety Board believes this manner of training significantly limits the opportunity for the instructor to observe and to critique nonstandard practices because he is part of the operating process. The Safety Board realizes that providing recurrent training to captains and first officers separately was not the policy of the Northwest Airlines DC-9-82 training

^{1/} For more detailed information, read Aircraft Accident Report--"Northwest Airlines, Inc., McDonnell Douglas DC-9-82, N312RC, Detroit Metropolitan Wayne County Airport, Romulus, Michigan, August 16, 1987" (NTSB/AAR-88/05).

department. Rather, the single-crewmember training sessions for the captain and first officer of flight 255 occurred as a result of nonroutine scheduling difficulties or other unforeseen circumstances. When training is conducted using a complete crew, the instructor is able to observe the manner in which the two crewmembers perform their duties. By observing the interaction of the crew, the instructor is better able to identify problems relating to communication, checklist usage, and standardization.

Historically, the industry in general, and Federal aviation regulations in particular, have emphasized during training and proficiency checks individual piloting skills as a measure of performance. This emphasis on individual performance pays insufficient attention to the importance of the crew functioning as a team. The Safety Board believes that training individuals to an individual level of performance does not necessarily provide for an effective, coordinated cockpit team.

The Safety Board believes line-oriented flight training (LOFT) and training in the management of crew-coordinated activities provides the opportunity to more fully train flightcrews in a team-oriented manner. LOFT focuses the training environment on the conduct of the entire crew; as such, it expands the training incorporated during the performance of individual maneuvers. Training crewmembers in management and communication skills will expand the crew's ability to more effectively coordinate information processing requirements.

Since 1968, the Safety Board has issued 22 recommendations to the Federal Aviation Administration (FAA) which addressed, in varying degrees, cockpit resource management (CRM). On April 15, 1985, the Safety Board recommended that the FAA:

A-85-27

Conduct research to determine the most effective means to train all flightcrew members in cockpit resource management, and require air carriers to apply the findings of the research to pilot training programs.

The FAA, in its December 1986 response to Safety Recommendation A-85-27, stated it had:

Initiated a program in the area of Aviation Behavioral Technology which is intended to develop and apply advanced behavioral analysis and technology to improve flight safety. The program includes projects on optimized line-oriented training to enhance cockpit resource management, improve cockpit/cabin communication and coordination, and improved pilot decision making training program.

The FAA further commented that this program would be a "long-term effort."

The Safety Board supports these efforts of the FAA and hopes that a priority will be given to this program that will allow its benefits to be incorporated in air carrier training programs as expeditiously as possible.

While the Safety Board believes there are benefits to be derived from any meaningful discussion on CRM, it also believes there is evidence that would indicate CRM training given solely in a quasi-classroom environment with diminished frequency will not provide to flightcrews the appropriate emphasis and hence the

long-term follow-through that is intended. Republic Airlines began training crews for CRM in the fall of 1983. It was presented in the recurrent ground school and was followed with instruction presented in Recurrent Training Bulletins (RTB) 83-3 and 83-4, and each RTB in 1984.

The flightcrew members on Northwest flight 255 received 3.5 hours of CRM training during their respective ground schools (general) in 1983. This was the last CRM training that each crewmember received. The Safety Board believes that the absence of leadership and coordination demonstrated by the accident crew suggests there is strong evidence to support that the CRM training they did receive was deficient and that future programs must go beyond the scope of a limited and traditional classroom forum.

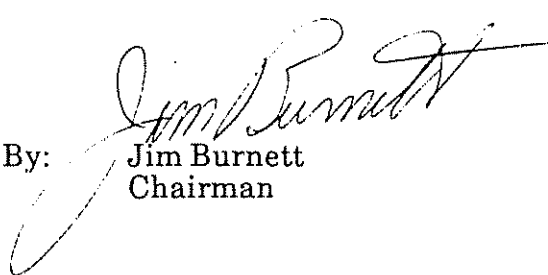
Therefore, as a result of its investigation, the National Transportation Safety Board recommends that all Part 121 air carriers:

Review initial and recurrent flightcrew training programs to ensure that they include simulator or aircraft training exercises which involve cockpit resource management and active coordination of all crewmember trainees and which will permit evaluation of crew performance and adherence to those crew coordination procedures.
(Class II, Priority Action) (A-88-71)

Also, the Safety Board issued Safety Recommendations A-88-64 through -70 to the Federal Aviation Administration.

BURNETT, Chairman, KOLSTAD, Vice Chairman, and LAUBER and NALL, Members, concurred in this recommendation.

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