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National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: June 24, 1991

In reply refer to: A-91-37 through -38

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On Thursday, January 25, 1990, at approximately 2134 eastern standard time,¹ Avianca Airlines flight 052 (AVA052), a Boeing 707-321B with Colombian registration HK 2016, crashed in a wooded residential area in Cove Neck, Long Island, New York. AVA052 was a scheduled international passenger flight from Bogota, Colombia, to John F. Kennedy International Airport (JFK), New York, with an intermediate stop at Jose Maria Cordova Airport, near Medellin, Colombia. Of the 158 persons aboard, 73 were fatally injured.²

The Safety Board determines that the probable cause of this accident was the failure of the flightcrew to adequately manage the airplane's fuel load, and their failure to communicate an emergency fuel situation to air traffic control before fuel exhaustion occurred. Contributing to the accident was the flightcrew's failure to use an airline operational control dispatch system to assist them during the international flight into a high-density airport in poor weather. Also contributing to the accident was inadequate traffic flow management by the FAA and the lack of standardized understandable terminology for pilots and controllers for minimum and emergency fuel states.

¹ Unless otherwise indicated, all times shown are eastern standard time, based upon the 24-hour clock.

² For more detailed information, read Aviation Accident Report-- "Avianca, the Airline of Colombia, Boeing 707-321B, HK 2016, Fuel Exhaustion, Cove Neck, New York, January 25, 1990." (NTSB/AAR-91/04)

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U.S. airlines, as well as most international airlines, require the flightcrew and the dispatcher to keep each other informed of conditions and events that may alter the planned conduct of the flight. One of the primary reasons for this requirement is to provide for redundancy in the operational control of the flight.

The dispatch function plays a critical role in the operations planning and conduct of a flight. This is especially true for situations involving deteriorating weather and air traffic delays. During such times, the dispatcher and flightcrew work together to determine the most prudent course of action in ensuring the safety of the flight. The dispatcher who "actively" follows a flight is often better able to bring to these corporate discussions a broader picture of environmental and operational-related factors that the flightcrew might not be fully aware of, or have anticipated.

Recorded air/ground communications between dispatch and numerous air carrier flights (Pan American World Airways, Inc. - Pan Am - Flight Control) that were waiting clearance to land at JFK on the evening of the accident revealed that as the flights arrived in the New York area, they contacted their respective dispatch facilities forwarding information on their fuel status and intentions. The dispatchers, in turn, kept their flights up to date on the dynamic weather and ATC situation at JFK, the availability of alternate landing sites, and the fuel quantity necessary to proceed safely to them. The respective flightcrews and dispatchers confirmed the specific time when the flight would begin its diversion to the agreed upon alternate landing site.

Avianca's General Operations Policy Manual required the captain and the dispatcher to establish communication with each other for "messages related to operational development or occurrences that are different than the original flight plan, such as weather conditions at the terminal or en route, availability of facility or services at the terminal or en route, a significant change of the flight plan, a deviation, or an emergency notification." Communication could have been established through the use of the high frequency (HF) radio on board the airplane or through the Dispatch Services dispatcher in Miami with which Avianca Airlines had a contract. The Safety Board was unable to determine why the flightcrew and the dispatcher did not communicate with each other when they were clearly able to do so.

While the intracockpit conversations of the flightcrew were only recorded for the last 40 minutes of the flight, there is no record of contacts between AVA052 and FAA flight service stations or flight watch during the flight. The Safety Board was unable to determine why the flightcrew did not use these valuable inflight services during the flight. This failure is especially serious because of the multiple holds that the flight encountered before its fuel state became critical.

Despite the findings about the inadequacy of the flight planning and dispatch aspects of AVA052, the airplane still had sufficient fuel to complete its flight safely. However, air traffic delays because of weather and traffic at JFK resulted in AVA052 entering holding on three occasions. During the first two holding periods, lasting 19 and 29 minutes,

respectively, the flightcrew expressed no concerns to ATC and did not make inquiries about the situation at JFK.

The Safety Board believes that Avianca Airlines, the DAAC, and the international aviation community, in general, should review their respective policies, procedures, and training to ensure that adequate emphasis is being placed on the dual responsibility that flight dispatchers and flightcrews have in keeping each other informed of events and situations that differ from those mutually agreed upon in the dispatch release.

Much of the flightcrew's failure to communicate effectively resulted from limitations in their ability to use the English language, and in their knowledge of standard ATC terminology. But the flightcrew also did not communicate effectively among themselves in their native language in addressing the operational problems they encountered. Specifically, the captain did not make use of dispatch and other resources available to him and he did not demonstrate the leadership decisionmaking and management skills needed under the circumstances. Further, the first officer and flight engineer did not provide the kind of active team support to the captain that was needed under the circumstances.

Air carrier accident investigation experience over the past 20 years has indicated that most of the accidents were attributable not so much to a lack of individual technical proficiency as to shortcomings in resource management and leadership abilities by captains, and active team support by other cockpit crewmembers. This experience has led to much greater emphasis on a team approach to training airline flightcrews by many airlines.

This approach, generally known as Cockpit Resource Management (CRM) training, has gained significant support in the airline industry and among regulatory authorities. CRM training is specifically designed to improve communication and teamwork among members of flightcrews, and to foster the use of all the resources at their disposal. FAA Advisory Circular 120-51 issued on December 1, 1989, provides guidance for the development of CRM training.

A training technique related to CRM, which emerged as a logical and parallel development based on accident experience, is Line Oriented Flight Training (LOFT). LOFT is intended to facilitate the transition from flight simulator training to line flying. LOFT training involves the use of a complete crew in a realistic, real-time, no jeopardy training environment (a simulation) where the results of crewmembers' actions are allowed to occur without instructor intervention. LOFT is a well-proven method of providing practice and feedback in crew coordination and problem solving which also has gained widespread acceptance in the airline community and strong support by the FAA. The Safety Board believes that the AVA052 flightcrew's ability to perform their duties on the accident flight could have been improved significantly if they had received CRM and LOFT training as part of their initial and recurrent qualification for line operations. Therefore, the Safety Board believes that Avianca Airlines should incorporate CRM and LOFT training concepts into the training of all of its flightcrews.

Therefore, as a result of its investigation of this accident, the National Transportation Safety Board recommends that the Departamento Administrativo De Aeronautica Civil, Colombia:

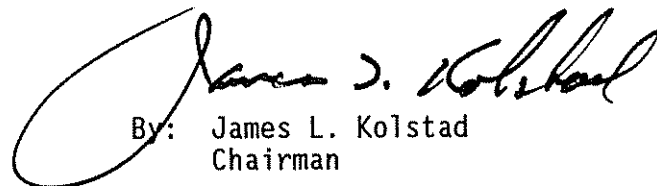
Review policies, procedures, training, and oversight activity to ensure that adequate emphasis is being placed on the dual responsibility that flight dispatchers and flightcrews have in keeping each other informed of events and situations that differ from those mutually agreed upon in the dispatch release. (Class II, Priority Action) (A-91-37)

Require that Avianca Airlines incorporate Cockpit Resource Management and Line Oriented Flight Training concepts into its flightcrew training program. (Class II, Priority Action) (A-91-38)

Also, the Safety Board issued safety recommendations to the Federal Aviation Administration.

The National Transportation Safety Board is an independent federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations A-91-37 through -38 in your reply.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, BURNETT, LAUBER, and HART, Members, concurred in these recommendations.


By: James L. Kolstad
Chairman