



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: November 14, 1995

In reply refer to: A-95-114 through -115

Mr. David Clark
President, Air Transport International
3800 Rodney Parham Road
Little Rock, Arkansas 72212

On Thursday, February 16, 1995, at 2027 central standard time, a Douglas DC-8-63, N782AL, operated by Air Transport International (ATI), was destroyed by ground impact and fire during an attempted takeoff at the Kansas City International Airport, Kansas City, Missouri. The three flight crewmembers were fatally injured. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed. The flight was being conducted as a ferry flight under Title 14 Code of Federal Regulations (CFR) Part 91.¹

The National Transportation Safety Board has determined that the probable causes of this accident were:

(1) the loss of directional control by the pilot in command during the takeoff roll, and his decision to continue the takeoff and initiate a rotation below the computed rotation airspeed, resulting in a premature liftoff, further loss of control and collision with the terrain.

(2) the flightcrew's lack of understanding of the three-engine takeoff procedures, and their decision to modify those procedures.

¹For more detailed information, read Aircraft Accident Report -- "Uncontrolled Collision With Terrain, Air Transport International, Douglas DC-8-63, N782AL, Kansas City International Airport, Kansas City, Missouri, February 16, 1995" (NTSB/AAR-95/06)

(3) the failure of the company to ensure that the flightcrew had adequate experience, training, and rest to conduct the nonroutine flight.

Contributing to the accident was the inadequacy of Federal Aviation Administration (FAA) oversight of ATI and FAA flight and duty time regulations that permitted a substantially reduced flightcrew rest period when conducting a nonrevenue ferry flight under 14 CFR Part 91.

On the accident takeoff, the power on the No. 4 engine was increased by the flight engineer in a rapid manner. During the takeoff roll, the relatively high engine pressure ratio (EPR) of 1.6 was called out 1 second before the airspeed alive call (50 to 60 knots).

Shortly after the first officer called "airspeed alive", there was an abrupt turn to the left, followed quickly by a correction to the right. After the first officer called "90 knots," the airplane started to turn left again. Following the 100-knot call, the flight data recorder revealed a pitch change, indicating that the pilot rotated the airplane about 20 knots before the target rotation speed of 123 knots. The left drift continued and the first officer was heard calling, "we're off the runway." A directional control correction was initiated, and the pitch attitude increased just as the airplane became airborne. The airspeed reached between 120 and 123 knots. This is just about V_{mca} (minimum control speed in the air), and it is about the stall speed for that airplane weight. The impact occurred as the airplane rolled to a nearly 90-degree left bank.

Discussions with pilots experienced in three-engine takeoffs confirmed that power on the asymmetrical engine should be applied very slowly, and that it is not until much closer to V_{mcg} that the power can be increased to approach the takeoff EPR.

The Safety Board believes that the company operations manual section describing three-engine takeoffs might have contributed to some of the confusion concerning this procedure. One section of the manual stated, "as soon as possible, smoothly accelerate the engine opposite the inoperative engine to MAX power during acceleration to V_{mcg} ." The Safety Board believes that this instruction, taken out of context, implies that early ("as soon as possible") acceleration of the asymmetric engine is desirable. This section also stated, "The engine should be set at MAX power upon reaching this [V_{mcg}] speed." This sentence may also be open to interpretation by some pilots, especially in light of the earlier instruction. In a

later, more detailed section, the manual stated, "Smoothly advance power on the asymmetrical engine during the acceleration to Vmcg speed. The asymmetrical throttle must be aligned with the symmetrical engine throttles by Vmcg." The Safety Board believes that this instruction is reasonably clear and that the throttle alignment portion of the instruction is unambiguous. However, the three-engine procedures taken as a whole, especially the asymmetric engine acceleration rate descriptions, could be made more coherent, and should emphasize the proper throttle technique.

The investigation of this accident revealed other shortcomings. A survey of nine other cargo operators revealed that only two used line flightcrews for three engine takeoffs, and that one of those two operators restricted three-engine takeoffs to only "the most experienced and selected" flightcrews. Seven of the nine restrict such takeoffs to only management flightcrews, such as check airmen or special maintenance ferry crews. The Safety Board concludes that ATI's policy of routinely assigning line flightcrews for such operations, when almost all other operators restrict such flights, is inappropriate.

Therefore, as a result of its investigation of this accident, the National Transportation Safety Board recommends that Air Transport International:

Review the ATI DC-8 operating manual discussion on three-engine takeoffs to ensure that it is understandable to all pilots who must accomplish such takeoffs. This section of the manual should emphasize the specifics of proper throttle application technique. (Class II, Priority Action) (A-95-114)

Discontinue the company policy of routinely assigning line flightcrews for three-engine ferry operations. Allow only specifically designated, highly experienced crewmembers to perform such operations. (Class II, Priority Action) (A-95-115)

Also, the Safety Board issued Safety Recommendations A-95-110 through -113 to the FAA.

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-95-114 and -115 in your reply.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT and GOGLIA concurred in these recommendations.

By: 
Jim Hall
Chairman