

THE CONVERSATION

What occurred in the cockpit is told best by an edited and annotated transcript from the pilots' voice recorder. It begins at the point Matheny wheeled onto the runway for takeoff.

Matheny: "Close as I can get to the end, Ron, without backing it up." (Only one nose gear steering wheel is installed in the 707, alongside the pilot's left knee. Sitting in the left seat, Matheny has positioned the jet at the farthest end of Cincinnati's runway so that none of its length goes wasted behind him. Now he turns the aircraft over to First Officer Ronald G. Reichardt, who will perform the takeoff.)

Cincinnati Tower: "TWA 159, cleared for takeoff."

Reichardt: "O.K."

Cincinnati Tower: "Delta 379, you're clear of the runway, aren't you?" (Delta Flight 379, the DC-9 jet, has just landed and is rolling to a stop near the runway's end. Here, the controller wants to be certain the runway is clear for TWA's takeoff. Clearance should have been ascertained *before* the controller gave Matheny and Reichardt the go signal.)

Delta 379: "Yeah, we're in the dirt, though." (The DC-9's tail section is just seven feet from the edge of the runway.)

Cincinnati Tower: "O.K., TWA 159, he's clear of the runway, cleared for takeoff, company jet on final behind you." (The controller, in effect, tells Matheny to hurry up because another TWA jet is descending to land on the same runway.)

Reichardt: "O.K., we're rollin'." (Engine roar reaches its highest pitch here.)

Matheny: "Eighty knots, you got 'er." (The jet's rudder becomes effective at 80 knots. Matheny takes his hand from the nose gear steering wheel and passes control of the plane to Reichardt in the right seat.)

Matheny: "Not very damn far off the runway." (He sees the Delta jetliner appear in the darkness.)

Reichardt: "Sure as hell isn't."

Matheny: "See that fire in the end?" (He spots the orange torch of fire belching from the DC-9's tail-mounted engines as the Delta pilots attempt to pry their craft from the mud. A loud boom is superimposed on this transmission. Engine noise decreases dramatically as Reichardt elects to abort the takeoff.)

Reichardt: "Good God, I hit him!"

THE RIGHT PROCEDURE

Both pilots stomped down on the brake pedals. Matheny raised the spoilers—large metal flaps that kill lift atop a jet's wings. Now the plane was supposed to stop before it ran out of concrete.

But it didn't stop. Instead, the 707 rolled off the far end of the 7800-foot runway, plowing into a ridge of earth. After its landing gear sheared, the plane belly-skidded to a halt on the grass. All 36 aboard leaped from its cabin just before the outbreak of a fuel-fed fire. There were no fatalities.

Reichardt had been wrong, however. His jet had not collided with another; it had instead produced a rare kind of backfire. Not knowing this, Reichardt elected to abort the takeoff, doing precisely the right things, quickly, in precisely the right sequence.

Because the accident killed no one, there was little fanfare on Dec. 5 when the National Transportation Safety Board convened a public hearing to investigate its cause. But at that hearing, a young attorney built a case that the FAA, the airlines and the manufacturers are finding difficult to ignore.

Using the Cincinnati accident as evidence, he argued that on hundreds of U.S. runways, when a jet engine fails at the all-important speed V₁, a crash becomes inevitable.

Donald W. Madole's credentials are unique in a highly specialized profession—aviation law. For several years, he was chief of the Civil Aeronautics Board's Hearings and Reports Division and, as such, presided over many an accident hearing. He is also a Navy plane commander with some 5000 hours of pilot time.

NO SAFETY MARGIN

Madole's job, as he saw it, was to expose a weakness in the certification process. This is how he proceeded:

Using the TWA jet's cockpit voice recorder, Madole showed that exactly 19 seconds elapsed between the time Matheny called "80 knots, you got 'er" and the