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A REKINDLED DEBATE OVER WIRING

As Urs Zimmermann, the captain of Swissair Flight 111, levelled his Boeing MD-11 jet out at 9,900 m, his 215 passengers settled in and waited for the attendants to serve supper. Soon after, Zimmermann noticed the first curls of smoke drift into the cockpit—and 16 minutes later, the plane slammed into the Atlantic Ocean off Peggys Cove, N.S. Last week, investigators examining pieces of the wreck said metal shards had been twisted by an

intense heat, while material above the pilots' seats had melted—possible evidence that a rapid and deadly electrical fire had ripped through the flight deck. And those revelations added to the growing debate over just how safe are the nearly 240 km of wires running through a large jetliner. "Because of these horrific crashes," says Ed Black, a former U.S. defence department airline wiring expert, "the wiring issue has come out of the closet."

Over the past eight years, various types of electrical problems have forced U.S. airlines to make more than 1,000 unscheduled stops, including two fire-related emergency landings each week. And as early as October, the U.S. Federal Aviation Administration plans to announce a sweeping inspection program to examine the wiring on more than 22,000 aging passenger jets, such as DC-9s and Boeing 737s. (Although MD-11s only came into service in 1990, they will also fall within the FAA study.) At the centre of the debate is a product called aromatic polyimide tape, which is widely

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used as a covering on aircraft wiring. If it cracks, electricity can arc to nearby material, setting it on fire. "Anytime you get in a plane with these kinds of wires," said Patrick Price, a former wiring expert with Boeing Co. in Seattle, "it's like taking an incendiary bomb on board."

In many cases, FAA inspectors will be looking at a brand of aromatic polyimide product known as Kapton. Developed by the U.S. chemical giant DuPont, it dominates the polyimide market. But in 1982, the U.S. navy stopped using it in its jet fighters when cracks in wires coated with Kapton

were linked to on-board fires. And according to Susan Bradley, a spokeswoman for Boeing, Kapton was the primary coating used on the wiring in Swissair Flight 111. When a fault develops in Kapton, electricity arcs along the wires in a phenomenon known as flash over, which burns at a searing 1,000° C. The fire can be so hot that it will even cut through metal steering controls, and Price and other critics suggest that just such a fire may have burnt through Flight 111's auxiliary power cables.

Since 1993, however, industry experts say Kapton has been improved by wrapping

it in a tough Teflon coating. The new product is still widely used, although some manufacturers have been phasing it out (Montreal-based Bombardier Inc., for one, does not use Kapton in its latest generation of passenger jets.) Boeing still insists that older versions of the product are safe. Said company spokesman John Thom: "Kapton was and is certified for use on commercial airplanes." Even so, FAA officials say they may soon order its removal from hundreds of planes.

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