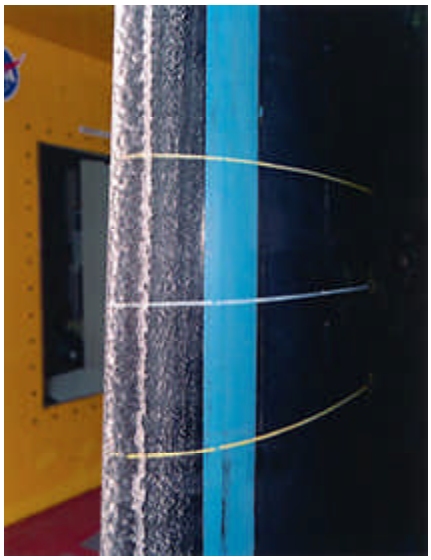
National Transportation Safety Board Aircraft Accident Investigation Supported

The main purpose of this investigation was for NASA to help the National Transportation Safety Board (NTSB) gain better understanding of the events that led to the loss of Comair Flight 3272 over Monroe, Michigan, on January 9, 1997. In-flight icing was suspected as being the primary cause of this accident. Of particular interest to the Safety Board was what NASA could learn about the potential performance degradation of the wing of the Embraer EMB-120 twin-turboprop commuter aircraft with various levels of ice contamination.

NASA agreed to undertake (1) ice-accretion prediction computations with NASA's LEWICE program to bound the kind of contaminations that the vehicle may have developed, (2) testing in the NASA Lewis Research Center's Icing Research Tunnel to verify and refine the ice shapes developed by LEWICE, (3) a two-dimensional Navier-Stokes analysis to determine the performance degradation that those ice shapes could have caused, and (4) an examination using three-dimensional Navier-Stokes codes to study the three-dimensional effects of ice contamination.



Ice accreted during the testing of the EMB-120 wing in Lewis' Icing Research Tunnel.

The experimental and two-dimensional Navier-Stokes study showed a possible scenario of what may have happened during the accident. Several of the ice shapes accreted in the Icing Research Tunnel had a rough-leading-edge ice accretion with a prominent ridge. The most significant finding of the analysis was that the ridged ice shape produced lift and drag degradations that could have caused the kind of control disruption recorded in Flight 3272.

The National Transportation Safety Board presented its findings in a public meeting on August 27,1998. One of the conclusions was that ice formation played a significant role in the accident. Among the safety recommendations, two were directed to NASA. The first recommended that NASA continue its efforts to develop training tools to educate the flying community regarding the hazards of in-flight icing. The second advised NASA to conduct additional research to define realistic ice shapes and understand their effect on aerodynamics to help in defining future certification and training requirements.

Find out more about icing research at NASA Lewis at http://icebox-esn.grc.nasa.gov/.

Lewis contacts: Andrew L. Reehorst, (216) 433-3938, Andrew.L.Reehorst@grc.nasa.gov; and Dr. Mark G. Potapczuk, (216) 433-3919, Mark.G.Potapczuk@grc.nasa.gov
Author: Andrew L. Reehorst
Headquarters program office: OAT
Programs/Projects: AOS