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## UD'S RESEARCH INSTITUTE PREDICTS THE PROBABILITY OF FAILURE RESULTING FROM CRACKS IN AIRCRAFT

The recent emergency landing of an Eastern Airlines Boeing 727, caused by a 14-inch hole in its fuselage, brings public attention to the problem of cracks and other maintenance problems in older airplanes.

In the University of Dayton's Research Institute (UDRI), researchers are developing a computer program that will help maintenance workers predict the probability of cracks and other failures.

Under a contract with the Flight Dynamics Laboratory in the Air Force Wright Aeronautical Laboratories at Wright-Patterson Air Force Base, Dr. Alan Berens predicts the chances of fatigue cracks causing problems by inputting data into a computer that describes crack sizes, crack locations, operational usage, inspection reliability and other information.

"What we're doing is not magical," said Berens, a senior research statistician with UDRI. "But we are able to predict how cracks grow. Safety is ensured by showing that there is a very small probability of large cracks in the structure that could encounter loads big enough to cause failure. Managers who make decisions about maintenance can use this data to decide whether to repair or replace aircraft."

The Air Force plans to use the risk analysis model at its Air Logistics Centers in Warner Robins, Ga.; San Antonio, Texas; Ogden, Utah; Sacramento, Calif.; and Oklahoma City, Okla.

For more information, contact Alan Berens at 229-4475, Joseph Burns (Air Force project monitor) at 255-6104 or Dr. Joseph Gallagher (supervisor, UDRI structural integrity division) at 229-4417. Gallagher teaches a fracture mechanics course through UD's materials engineering program.



*The University of Dayton*

For further information or assistance in scheduling interviews, contact Public Relations and University Communications, 229-3241.