Engineering Challenges in Aviation Accident Investigations

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ARMS 1109

Abstract
The investigation of aircraft accidents not only provides engineering challenges in determining failure modes that might have lead to the accident but also provides designers with data to use in preventing future similar accidents. Air travel is extremely safe and aircraft are designed for failure rates of less than one in a billion. Yet, accidents do occur and some of these accidents are the result of engineering and design issues. The investigation of aviation accidents requires expertise in the areas of aircraft performance, powerplants, systems and systems integration, structures, human factors engineering, safety analysis, computer programming, and metallurgical analysis. The very occurrence of an accident indicates a situation has taken place that was outside of the original designers’ assumptions. Often an accident investigation requires innovative and complex engineering analysis involving computer simulations and test protocols to simulate or safely recreate the conditions that lead to an accident. In some cases, these simulations and tests exceed those that were required for the certification of the aircraft. Regulatory agencies and designers use the data collected from accident investigations to modify designs, operational procedures, and certification requirements.

Bio
Mr. Haueter is the Director of the National Transportation Safety Board’s Office of Aviation Safety and has over 25 years experience in aircraft accident investigation. Mr. Haueter joined the Safety Board as an aircraft structures investigator, then became an Investigator-in-Charge (IIC) of domestic air carrier accident investigations and as the U.S. Accredited Representative for foreign aviation accidents. Subsequently, Mr. Haueter served as Deputy Director and the Chief of the Major Investigations Division. In these roles, he provided management oversight of major aviation investigations such as the TWA Flight 800 and American Airlines Flight 587 and was responsible for the Safety Board’s support of the FBI’s investigation of the September 11, 2001 terrorist attacks. He was the IIC for the investigation of September 8, 1994 accident involving USAir flight 427, which resulted in the redesign of the rudder system on Boeing 737 series. Additionally, Mr. Haueter was an advisor to the space shuttle Columbia accident investigation Board. As the Director of the Office of Aviation Safety, he is responsible for the investigation of all domestic aviation accidents and the Safety Board’s response to major foreign aviation accidents.

Mr. Haueter’s previous employment includes: Tracor Inc. as a program manager for research and development; Telcom Inc. as composite aircraft structures design engineer, and Pratt & Whitney Aircraft as a structures engineer.

Mr. Haueter is an alumnus of Purdue University where he received a BS in Aeronautical and Astronautical Engineering; he received an MBA in Operations Research and International Business from George Mason University. Mr. Haueter holds a commercial pilot’s license with multi-engine and instrument ratings and regularly flies a 1943 Stearman airplane that he restored.

An informal coffee & cookie reception will be held prior to the lecture at 2:30 p.m.
in the John L. Rich Conference Room, ARMS 3326