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Rebuilding of aircraft flight path for the purpose of accident investigation

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Today's world skies are full of airplanes of different sizes and functions. Transporting people and goods by airplanes is a vital aspect of today's life and economy. Thousands of aircraft are dispatched and received from thousands of airdromes all over the world. Despite of the modern technology means for air traffic control, and the very tight maintenance and inspection schedules, aircraft may be subjected to unusual flying conditions, which might cause aircraft accidents. In many cases, knowing the reason behind a specific accident usually requires intensive investigation from qualified people for considerable time and effort. In many cases, assuming certain scenarios is necessary to come up with a solid persuasive conclusion on the cause as well as the behavior of the aircraft in the last moments before crash. Numerical simulation of the full equations of aircraft motion, and other related expressions in time domain, may represent a suitable technique to help investigators to solve the usually many arising questions after the accident. In this paper an attempt was made to lay down the necessary equations and expressions, and the most suitable technique to perform such numerical investigation. Solving the equations of aircraft motion in time domain lends it self to easy understanding and interpretation. Some hypothetical failure scenarios were proposed for a hypothetical aircraft. Results indicate logical behavior of the aircraft, and also show the usefulness of this technique for the purpose of aircraft accident investigation.

Biography

Abdulhamid A Ghmmam has completed his MEng from Carleton University, Ottawa, Canada in 1989, and his PhD from Warsaw University of Technology in 1998 at the Department of Aeronautics and Applied Mechanics. He has been involved in teaching course of aerodynamics and flight mechanics for under graduate and post graduate students. He has participated in many activities related to assessment of graduation projects and promotion of staff members. He had the opportunity to act as the dean of the Faculty of Engineering, University of Tripoli, from late 2002 to early 2007. The main areas of research activity are the high angle of attack aerodynamics and aircraft motion simulation.

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