

Summary of Results from Three Full Scale High Wing General Aviation Crash Tests

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Abstract

During the summer of 2015, three Cessna 172 General Aviation (GA) aircraft were crash tested at the Landing and Impact Research Facility (LandIR) at NASA Langley Research Center (LaRC). The three crash tests simulated three different crash scenarios. The first simulated a flare-to-stall emergency or hard landing onto a rigid surface such as a road or runway, the second simulated a controlled flight into terrain with a nose down pitch on the aircraft, and the third simulated a controlled flight into terrain with an attempt to unsuccessfully recover the aircraft immediately prior to impact, resulting in a tail strike condition. An on-board data acquisition system (DAS) captured 64 channels of airframe acceleration, along with acceleration and load in two onboard Hybrid II 50th percentile Anthropomorphic Test Devices (ATD), representing the pilot and co-pilot. Each of the three tests contained different airframe loading conditions and different types of restraints for both the pilot and co-pilot ATD. Airframe and occupant responses from each of the tests will be presented, and airframe and restraint performance will be discussed.