

Summary of Results from a Fokker F28 Full Scale Crash Test

Justin Littell

NASA Langley Research Center

12 W Bush Rd

Hampton VA 23681

Abstract

During the summer of 2019, a Fokker F28 MK1000 aircraft was crash tested at the Landing and Impact Research Facility (LandIR) at NASA Langley Research Center (LaRC). The test, which was conducted in cooperation with the FAA Technical Center and the FAA Civil Aeromedical Institute (CAMI), had multiple objectives. The first objective was to obtain data for aircraft undergoing a combined vertical plus horizontal impact condition, and then compare results to aircraft sections under vertical loading only. The second was to evaluate Anthropomorphic Test Devices (ATDs, a.k.a. crash test dummies) of various sizes and positions for the determination of occupant injury. The third was to evaluate new and novel experimental ATDs including a larger Hybrid III, the Test Device for Human Occupant Restraint (THOR), and the Warrior Injury Assessment Manikin (WIAMan). Finally, the generated data was used to calibrate and validate computer simulation efforts.

On-board data acquisition systems (DAS) captured loading on the airframe and the 24 on-board occupants while multiple high-speed cameras captured the motion. The port side of the airframe was painted with a stochastic monochromatic speckle pattern to allow for the collection of high-speed airframe deformation digital image correlation data. Airframe and occupant responses from each of the tests will be presented, and airframe and restraint performance will be discussed.