

Impact Acceleration Evaluation of a Boeing 727 Crash Test

Thomas Barth, Ph.D.
Survival Factors Investigator
NTSB

The Discovery Channel conducted a full scale crash test of a Boeing 727 aircraft in the spring of 2012. The crash test was made into a television documentary film which focused on the process of crashing the aircraft by remote control as well as various scientific experiments installed in the aircraft. This presentation, while giving some background of the overall event, will focus on the measured floor accelerations during the aircraft impact. The objective was to evaluate the floor accelerations to determine the “impact crash pulse” as related to passenger seat design. The method was to collect data from tri-axial accelerometers positioned at three locations along the aircraft cabin floor. Video data was also collected which was used to visualize the dynamics of the crash. The results evaluate the floor acceleration data using various quantitative and qualitative methods. The video results are used to better comprehend the time phases of the whole event versus the primary impact. The results are then compared with the current impact dynamic conditions prescribed in Federal Aviation Regulations (FAR 25.562), and conclusions are made regarding the implications of these test results on aircraft seat testing and design.

Notes:

1. I have not yet determined if this will be only a presentation or if I will include a written paper. This depends on the progress of the evaluation at the deadline for the submission.
2. This project was conducted as an outside activity from my position as a government employee of the NTSB. The presentation can not be portrayed as having an affiliation with the NTSB. My presentation are my views and not given on behalf of the NTSB. In order to make that clear, my biographical information must include a range of my professional experience (must not state only that I’m an NTSB investigator).