Hybrid II and Hybrid III FAA Numerical Model Validation Guidelines

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Physical testing is increasingly being replaced by numerical simulation models because it provides a more rapid and less expensive way to evaluate design concepts and design details. Advisory Circular (AC) 20-146 sets forth an acceptable means, but not the only means, for demonstrating compliance to the following by computer modeling analysis techniques validated by dynamic tests:

- Title 14 Code of Federal Regulation (14 CFR) parts 23, 25, 27, and 29, sections 23.562, 25.562, 27.562, and 29.562.

- The Technical Standard Order (TSO) associated with the above regulation, TSO C127/C127a.

This AC provides guidance on how to validate the numerical model and under what conditions the model may be used in support of certification or TSO approval/authorization. AC 20-146 relays in the engineering judgment of the applicant and the FAA ACO to determine compliance. This AC could be enhanced if more specific data pertaining the ATD modeling and validation procedures were defined. This paper provides a description of current numerical ATD HII and HIII FAA databases available, as well as a proposed method and dynamic tests used for validation.