FAA SMOKE TRANSPORT CODE VALIDATION

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A computational model designed to predict smoke and gas transport within aircraft cargo compartments has been validated for use in the certification process of cargo compartment fire detection systems. The simulations and experiments compared represent a spectrum of scenarios that provide confidence in the models' ability to predict the transport of smoke and combustion products in a variety of conditions. The main variables that changed between the cases were fire location, compartment size, and ventilation. Validation metrics suitable for fire detection system response were selected, and overall, the model favorably predicted these metrics for the selected cases. The model can now be used with improved confidence to simulate certification scenarios of interest to assist in designing the optimum detection systems for cargo compartments.