

***** ABSTRACT ONLY *****

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SFPE ENGINEERING TASK GROUP ON COMPUTER MODEL EVALUATIONS: STATUS REPORT - DETACT

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In 1995, the Society of Fire Protection Engineers formed a task group to evaluate the scope, applications and limitations of computer models intended for use in the engineering evaluation and design of fire and life safety measures. The Task Group's first objective was to identify an evaluation methodology and select a model to use as a test case.

After examining several approaches to evaluating a computer model, the Task Group decided on following the ASTM Standard Guide for Evaluating the Predictive Capability of Deterministic Fire Models, E-1355. The guide "provides a methodology for evaluating the predictive capabilities of a fire model for a specific use." Specifically the method addresses four areas of evaluation: 1) model definition and evaluation scenarios, 2) verification of theoretical basis and assumptions used in the model, 3) verification of the mathematical and numerical robustness of the model, and 4) quantification of the uncertainty and accuracy of the model predictions.

The Task Group chose DETACT as the first model to undergo evaluation. The scenarios for which the model can be evaluated are limited in part by having appropriate full scale test data for comparison. Data which can be used for model evaluation is not widely available, due to many of the uncertainties inherent to large scale fire data sets. The scenarios for DETACT range from a 2.4 m X 3.6 m X 2.4 m high compartment to a 30 m X 30 m X 12 m high space. The later data set resulted from a test program that SFPE funded at Underwriters' Laboratories specifically for this evaluation effort.

The resulting evaluation document is intended to supplement the model's users guide by demonstrating the capabilities and limitations of a given model and highlighting underlying assumptions that are important for users to consider when applying the model. Examples taken from the DETACT evaluation will be presented.