Computer Models
For
Fire and Smoke

Model Name: DETACT-T2 (DETector ACTuation – Time squared)

Very Short Description: A program for calculating the actuation time of thermal devices below unconfined ceiling for fires with heat release rates which grow with time squared.

Modeler: D.W. Stroup, National Institute of Standards and Technology, (now with U.S. General Services Administration).

References: Evans, D.D., Stroup, D.W. and Martin, P., "Evaluating Thermal Fire Detection Systems (SI Units)," NBSSP 713, National Institute of Standards and Technology (formerly National Bureau of Standards), April 1986.

Availability: Source code and executable program available on the National Institute of Standards and Technology Fire Research Computer Bulletin Board at no cost.

Hardware: The executable program will run on an IBM PC or compatible computer. The source code will compile on a computer that supports BASIC.

Language: An executable program is available for IBM PC and compatible computers. Source Code is in BASIC.

Size: 64K free memory for DOS version

Detailed Description:

DETACT-T2 is a program for calculating the actuation time of thermal devices below unconfined ceilings. It can be used to predict the actuation time of fixed temperature and rate of rise heat detectors, and sprinkler heads subject to a user specified fire which grows as the square of time. DETACT-T2 assumes that the thermal device is located in a relatively large area, that is, only the fire ceiling flow heats the device and there is no heating from the accumulated hot gases in the room. The required program inputs are the ambient temperature, the response time index (RTI) for the device, the activation and rate of rise temperatures of the device, height of the ceiling above the fuel, the device spacing and the fire growth

rate. The program outputs are the time to device activation and the heat release rate at activation.