General Characteristics		
1	**Abstract of Model Capabilities**	COMPBRN III models a single-room zone fire for probablistic risk assessments.
2	**Sponsor and/or Developing Organization**	Sponsoring Organization: Nuclear Regulatory Commission (NRC) Developing Organization: University of California at Los Angeles (UCLA) Mechanical Engineering Department
3	**Last Custodian/ Point of Contact**	George Apostolakis University of California at Los Angeles (UCLA) Mechanical Engineering Department Electric Power Research Institute (EPRI)
4	**Life-Cycle**	COMPBRN III is a follow on effort to the COMPBRN I and COMPBRN II models. The EPRI Version COMPBRN 3-e is proprietary.
5	**Model Description Summary**	COMPBRN III models fires in an open and closed compartment using a 2-layer zone model approach. Thermal radiation and flame propagation is included.
6	**Application Limitation**	See weaknesses.
7	**Strengths/ Limitations**	**Strengths:** Runs quickly; Has a flame spread model; Thermal radiation to targets; and, Prediction of damage and ignition. **Limitations:** Applicable only to a single room; Quasi-steady-state assumptions; Highly dependent on experimentally-determined parameters; No spatial resolution of temperature gradients; No suppression models; No radiological release models; Flame spread occurs along discrete elements; and, Requires user input of burning rate parameters.
8	**Model References**	! V. Nicolette, et. Al., "Observations Concerning the COMPBRN III Fire Growth on ANS/ENS Conference on PRA, Pittsburgh, PA, April 12, 1989, SAND 88-2160. ! V. Ito, N. Siu, G. Apostolakis, "COMPBRN III - A Computer Code for Modeling Compartment Fires", UCLA Report - ENG-8524, November 1985.
9	**Input Data/Parameter Requirements**	COMPBRN III requires a large amount of input, inclusive of room geometry, ventilation, doorway locations, etc.
10	**Output Summary**	COMPBRN III outputs total mass burning rate, total heat release rate, hot gas layer temperature and depth, indication of fuel cell damage and burning, radiative and total heat fluxes to targets, fuel cell mass, flame height over each fuel cell, flame temperature over each fuel cell, fule cell temperature, and heat transfer coefficient for each cell.
11	**Applications**	Single compartment only. Pre-flashover. No suppression. Small fires which correlations are generally applicable. Single compartment geometries. No fast-transient fires.
12	**User-Friendliness**	Some user inputs are not well-defined (e.g., burn rate parameters). Work required to input thermal radiation communication matrix and geometries. Runs quickly. Can restart with different parameters.
13	**Hardware-Software Interface Constraints/ Requirements**	PC with 80386 processor or workstation. FORTRAN compiler, text editor.

15	**Surety Considerations**	**Quality Assurance: User Manual:** V. Ito, N. Siu, G. Apostolakis, "COMPBRN III - A Computer Code for Modelling Compartment Fires", UCLA Report - ENG-8524, November 1985. **Error Handling:** Limited capability. **Benchmarking and V&V:** **Benchmarking and Verification:** V. Ito, N. Siu, G. Apostolakis, "COMPBRN III - A Computer Code for Modelling Compartment Fires", UCLA Report - ENG-8524, November 1985. **Validation Against Experimental Data:** V. Ito, N. Siu, G. Apostolakis, "COMPBRN III - A Computer Code for Modelling Compartment Fires", UCLA Report - ENG-8524, November 1985; G. Chung, N. Siu, and G. Apostolakis, "Improvements in Compartment Fire Modeling and Simulation of Experiments", Nuclear Technology, 69, p. 14, 1985; J. Lambright et al., "Fire Risk Scoping Study", Sandia National Laboratories, SAND 88-0177, NUREG/CR-5088, December, 1989.
16	**Runtime Characteristics**	Less than 5 minutes.

Specific Characteristics

Part A: Source Term Submodel Type

A1	**Source Term Algorithm?**	✔YES NO

Part B: Dispersion Submodel Type (No Information Provided.)

Part C: Transport Submodel Type (No Information Provided.)

Part D: Fire Submodel Type

D1	**Radiant Energy**	Yes
D4	**Flash Fires**	Yes

Part E: Energetic Events Submodel Type (Not Applicable)

Part F: Health Consequence Submodel Type (Not Applicable)

Part G: Effects and Countermeasures Submodel Type (Not Applicable)

Part H: Physical Features of Model (No Information Provided.)

Part I: Model Input Requirements (No Information Provided.)

Part J: Model Output Capabilities

J4	**Tabular at Fixed Downwind Locations**	Yes

Part K: Model Usage Considerations (No Information Provided.)