Status of NRC/EPRI Joint Research Activities Supporting Fire PRA Realism

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NUREG-2178 Vol. 2 (EPRI 3002016052)

- Fire Modeling Guidance for Cabinet Zone of Influence
- Revised Cabinet to Cabinet Propagation
- Heat Release Rates for Motors and Dry Transformers
- Wall and Corner Effects
- Non-suppression Floor Value
- Main Control Board Fire Modeling

NUREG-2230 (EPRI 3002016051)

- Derived from Operating Experience
- Credit for Plant Personnel Detection
- Concept for Interruptible and Growing Fires
- Revised Heat Release Rate Profiles
- Non-suppression Event Tree for Crediting Personnel Suppression
- Non-suppression Probability Floor

Transient Fuel Package Project

- NRC, EPRI, Jensen-Hughes, & NIST
- Test Data to Better Reflect Operating Experience
- Realistic Nuclear Transient Fire Scenarios
  - 98 Fuel Packages
  - 290 Tests
  - Ignition: Lighter, Cotton Wick, Open Flame
- Testing Complete
- Data Analysis Underway

Transient Fuel Package Project
(continued)

- Screening of targets based on probabilistic distributions for target damage
  - Provide screening for vertical (plume temperature) , vertical for a fire in a corner, and horizontal (radiative heat flux) Zones of Influence
  - Provide screening for the categories of exposed sensitive electronics, thermoplastic cable, Kerite cable, thermoset cable, and tray ignition.

- Provide guidance for the detailed modeling of fires (e.g. hot layer development, time-to-damage, etc.)
  - Account for the probabilistic distribution in total energy release
  - Account for the probabilistic distribution in peak heat release rate ZOI.
  - Provide guidance on the shape of the HRR curve (Growth, Steady State, and Decay)
  - Provide guidance on the size of the fire, i.e., the Fire Froude number or Q*.