



# Status of External Events PRA Modeling at the US Nuclear Regulatory Commission

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# NRC's Risk Tools Enhancement

- Currently undertaking activities to update and enhance internal risk tools (including external events)
  - Discussed at Public Meeting on March 2010
- NRC maintains 78 Level 1, Internal Events Standardized Plant Analysis of Risk (SPAR) Models
- NRR and RES are collaborating to develop a number of additional models
  - 16 External Events Models (based on IPEEE information) with all hazards applicable to site

# SPAR External Events Modeling

- NRC uses risk tools such as SPAR models as input for risk-informed decision-making
  - Significance Determination Process (SDP)
- Staff is cognizant of challenges in developmental models use for regulatory decision-making
- Reflection of most up-to-date/best estimates is a common goal for NRC risk tools enhancement
  - NFPA805 PRA models are up-to-date/best estimates

# Information Needs for Modeling

- Scenario description
- Scenario (initiating event) frequency
- Initiating event caused by the fire
- Failed equipment (system/train/component)
- Failed (or affected) operator actions
- Additional operator actions credited and their HEPs

# Example Completed Table

|   | Scenario Symbol | Scenario Description                                 | Ignition Frequency | Equipment Failed | Scenario (Initiating Event) Frequency | CCDP     | CDF      | Equipment Lost (in PRA model) | Initiating Event Caused (transfer) | Comment (or new operator actions) |
|---|-----------------|--|--------------------|------------------|---------------------------------------|----------|----------|-------------------------------|------------------------------------|-----------------------------------|
| 1 | FRI-RB06-01     | RB06 Fire Scenarios with no ECCS damage              | 5.95E-03           | Main Condenser   | 2.56E-03                              | 1.30E-05 | 3.32E-08 | Condensate pumps              | TRANS                              | ...                               |
| 2 | FRI-RB06-02     | RB06 Fire Scenarios with RHR Division I damage       | 5.95E-03           | One RHR Division | 8.41E-04                              | 9.33E-04 | 7.85E-07 | RHR pumps A and C             | TRANS                              | ...                               |
| 3 | FRI-RB06-03     | RB06 Fire Scenarios with RHR Divisions I & II damage | 5.95E-03           | All RHR          | 2.55E-03                              | 7.42E-05 | 1.90E-07 | RHR pumps A, B, C, D          | TRANS                              | ...                               |