

January 9, 2003

MEMORANDUM TO: Gary M. Holahan, Director  
Division of Systems Safety and Analysis  
Office of Nuclear Reactor Regulation

Robert C. Pierson, Director  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards

FROM: Scott F. Newberry, Director/**RA**  
Division of Risk Analysis and Applications  
Office of Nuclear Regulatory Research

SUBJECT: DISTRIBUTION OF FINAL REPORT, "IMPROVED FIRE RISK  
ANALYSIS METHODOLOGY FOR DETERMINATION OF THE  
FREQUENCY OF CHALLENGING FIRES"

Attached for your attention is the subject report. It is being made widely available to the public by its distribution as an attachment to this memorandum (and by placement in the ADAMS system at Accession No. ML030150388).

The report focuses on fires that are challenging from a risk point of view, i.e., fires that can challenge risk-important targets within the plant. It proposes a mechanistic model for calculating the frequency of potentially challenging fires by linking fire initiation and subsequent fire modeling, and it demonstrates that the initial stages of a variety of challenging, real-world fires fit the proposed model. It thus proposes a potential improvement to presently used methods, which apply a somewhat subjective "fire severity factor" to remove fires from actual fire data bases that don't have the potential to develop sufficiently to challenge safe shutdown of the plant.

As such, this report will become one part of the improvements under development by DRAA's program to develop improved probabilistic methods to accurately evaluate NPP fire risk through the use of improved fire PRA techniques. These improved fire PRA techniques will become part of the PRA technology whose increased use in all regulatory matters has been directed through the Commission's PRA Policy Statement.

That Commission policy is in support of their "Strategic Plan: Fiscal Year 2000 - Fiscal Year 2005," NUREG-1614, Vol. 2, Part 1, in which are three relevant performance goals (PG) and related strategies (S):

PG: "Maintain safety, protection of the environment, and the common defense and security."

S: "We will continue to develop and incrementally use risk-informed and, where appropriate, less prescriptive performance-based regulatory approaches to maintain safety."

PG: "Make NRC activities and decisions more effective, efficient, and realistic."

S: "We will use risk information to improve the effectiveness and efficiency of our activities and decisions."

PG: "Reduce unnecessary regulatory burden on stakeholders."

S: "We will utilize risk information and performance-based approaches to reduce unnecessary regulatory burden."

Thus, the subject report relates to and is in support of all three of the above NRC performance goals and strategies, which all require utilization of risk information in carrying out our mission.

We will utilize the report in conducting a fire risk requantification effort currently underway in cooperation with EPRI at two representative nuclear power plants. After this trial use (and the likely improvements that will be made in the method as a result of this trial), we will be able to provide further information related to the method's value and limitations to the NRC and to the nuclear industry. However, we do currently believe the report will be of use to industry practitioners who are applying the most recent methods to perform fire PRAs, and by NRC personnel who are reviewing those applications. As such, it should be a valuable piece of background material for the staff's Fire Protection Improvement Program and other similar activities.

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Attachment: Improved Fire Risk Analysis Methodology Report

cc: Distribution (see attached list)  
PRAB Subject File  
Central File  
PDR

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\*See previous concurrences

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