

May 7, 2003

MEMORANDUM TO: David Lew, Acting Chief  
Probabilistic Risk Analysis Branch  
Division of Risk Analysis & Applications

THRU: Mary T. Drouin / RA /  
Probabilistic Risk Analysis Branch  
Division of Risk Analysis & Applications

FROM: Brad Hardin / RA /  
Probabilistic Risk Analysis Branch  
Division of Risk Analysis & Applications

SUBJECT: NOTICE OF A PUBLIC WORKSHOP WITH INTERESTED  
STAKEHOLDERS FOR DISCUSSION OF ISSUES REGARDING THE  
DEVELOPMENT OF A FRAMEWORK FOR FUTURE NUCLEAR  
POWER PLANT LICENSING

DATE AND TIME: May 28, 2003  
9:00 a.m. - 5:00 p.m.

LOCATION: Ramada Inn (Georgetown Room)  
1775 Rockville Pike, Rockville, MD, 20852  
(301) 881-23000

PURPOSE: To discuss and solicit comments on the fundamental issues, options and  
potential approaches associated with the development of a framework for  
future nuclear power plant licensing.

The NRC has initiated work to develop a technology neutral, risk-informed and performance-based approach for licensing future nuclear power plants (NPPs). This work is in the early stages and is focused on defining the scope, structure and bases for such an approach which will serve as guidelines (framework) for the development of a set of technology neutral, risk-informed and performance-based regulations for future NPP licensing.

The current regulations for licensing NPPs are contained primarily in 10 CFR 50. Other parts of 10 CFR also affect NPP licensing (e.g., 10 CFR 20, 10 CFR 100). 10 CFR 50 contains a mix of requirements, some generic to any reactor technology and some specific to light water reactors (LWRs). Likewise, some of the requirements in 10 CFR 50 are very prescriptive while others are non-prescriptive. In addition, many of the current regulations were put in place prior to the benefit of insights resulting from probabilistic risk assessments (PRA).

The nuclear industry has underway initiatives to develop new NPP designs, many of which have been or may be submitted to NRC for a licensing review. These designs include technologies other than LWR technology (e.g., high temperature gas-cooled reactor technology) as well as LWRs and in many cases rely on probabilistic risk assessment in many aspects of the design. Additionally, they are employing features, such as passive decay heat removal, that are intended to improve safety by reducing the likelihood of core damage, reducing reliance on operator actions and electric power and providing increased time for corrective actions. In the past, when non-LWR designs were submitted for review, case-by-case determinations had to be made regarding their safety using 10 CFR 50 as guidance. Such a review process was inefficient and time consuming and had the potential to result in inconsistencies in licensing decisions. As indicated above, the purpose of this effort is to develop an improved approach for licensing future nuclear power plants. The attachment to this notice provides further discussion about this program.

Persons other than NRC staff and NRC contractors interested in making a presentation at the workshop should notify Mary Drouin, Office of Nuclear Regulatory Research, MS: T-10E50, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001, (301) 415-6675, email: mxd@nrc.gov

PARTICIPANTS:	<u>NRC</u>	<u>Industry</u>
	M. Drouin	R. Simard, NEI
	T. King	S. Floyd, NEI
	S. Magruder	

Attachment: Discussion

\*Meetings between the NRC technical staff and applicants or licensees are open for interested members of the public, petitioners, interveners, or other parties to attend as observers pursuant to "Commission Policy Statement on Staff Meeting Open to the Public," 65 Federal Register 56964, 9/20/2000. Members of the public who wish to attend should contact Mary Drouin at (301) 415-6675 or mxd@nrc.gov.

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\* see previous concurrences

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DATE	04/ 24 /2003		04/ 24 /2003		05/ 7 /2003					

## **Workshop on Issues Related to the Development of a Framework for Future Nuclear Power Plant Licensing**

May 28, 2003

### Further Discussion of Issues

To improve the review process for future plants, NRC has initiated work to develop a technology neutral, risk-informed and performance-based approach for licensing future NPPs. This approach would build upon the experience with LWRs and the use of probabilistic risk assessment and, if successful, result in an alternative to 10 CFR 50 that could be used by future plant designers. In developing this approach there are a number of fundamental issues and options which need to be considered. Listed below are preliminary issues and options (in the form of questions) which NRC would like to discuss and receive feedback on at the workshop in order to develop the bases and framework for the new licensing approach.

#### 1. Issues relating to scope:

- Which plants will likely utilize a new licensing approach?
- Should the scope of the new licensing approach include:
  - design?
  - construction?
  - operation?
  - security?
  - siting?
  - spent fuel storage?
  - other?
- Should worker protection be included in the scope?

#### 2. Issues relating to structure:

- Should the cornerstones from the reactor oversight program be used as the basic structure?
- How should defense-in-depth be incorporated into the structure?
- Should the new approach be a stand alone part to 10 CFR or reference other parts of 10 CFR, as necessary?

#### 3. Issues relating to content:

- Should the approach contain a combination of deterministic and probabilistic requirements?

If so, what should the deterministic requirements include:

- good engineering practices?
- good operating practices?
- good construction practices?
- others?

- What probabilistic requirements should be considered?
  - prevention?
  - mitigation?
  - reliability?
  - other?
- Should the concept of design basis accidents be retained?
- To what level of detail should the technology neutral licensing requirements be written:
  - top level objectives?
  - general design criteria?
  - other?
- Should cost-benefit considerations be included?
- How should enhanced margins of safety be encouraged?
- What approach should be taken in setting criteria and performing safety analysis:
  - best-estimate analysis?
  - conservative acceptance criteria?
  - level of confidence?

4. Issues related to implementation:

- How should multiple units on a site be accounted for?
- What completeness and quality of PRA should be required?
- Should PRA success criteria and DBA acceptance criteria be made consistent?