

Staff's Response to Exelon's approach for Licensing Framework

The staff presented its evaluation of Exelon's proposal for the use of a risk-informed licensing framework. The staff indicated that the NRC is receptive to risk-informed, performance-based approaches but indicated that such approaches would need to address the issues identified in Regulatory Guide 1.174, specifically: (1) defense-in-depth; (2) treatment of uncertainties; (3) safety margins; (4) monitoring; and (5) inclusion of deterministic data and engineering calculation data. Exelon agreed that these were important issues that need to be addressed.

To support the proposed licensing schedules, the staff and Exelon agreed that the licensing of the PBMR would be accomplished within the existing regulations using exemptions where a regulation is not applicable and license conditions where there is a gap in the regulations for the PBMR technology. However, Exelon questioned whether it would be possible for the NRC to make a determination that certain regulations are only applicable to light-water reactors and do not need an exemption to be granted to license the PBMR. The NRC agreed to evaluate this further. Exelon's proposal differs from the longer term efforts being proposed by the Nuclear Energy Institute which would include a proposal for rulemaking.

The staff noted that the concept of a regulatory framework includes supporting guidance documents such as Regulatory Guides and the Standard Review Plan and that the development of guidance documents, either modification of the current ones or development of PBMR-specific ones, will be a necessary activity to support licensing of a PBMR.

Exelon reiterated three questions from an April 30, 2001, meeting, and a June 1, 2001, letter regarding identification of top level regulatory criteria, mission linkages, and frequency-consequence diagrams. The staff responded that the NRC was continuing to evaluate Exelon's proposals but indicated that the current NRC regulatory framework was not developed in a hierarchical manner and that it would be difficult to try to rearrange them as such. The staff noted that it has experience with gas cooled reactors, most recently the preapplication reviews on General Atomics' Modular High-Temperature Gas-Cooled Reactor (MHTGR) design. This preapplication review identified that, while the top-level regulatory criteria are valid and necessary because they must be met for a nuclear power plant to be licensed, they do not provide sufficient assurance that the design provides the same degree of protection for the public and environment that is required for current-generation light-water reactors and that other criteria need to be included such as the Standard Review Plan and other appropriate guidance documents. The staff indicated that the approach proposed by Exelon could be an effective tool to identify gaps in the current regulations for a PBMR that could be addressed by license conditions, and could provide a basis for the NRC to grant exemptions to regulations that do not contribute to providing adequate safety or an equivalent level of safety as current light-water reactors when applied to a PBMR.

