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POLICY ISSUE (Information)

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For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: QUARTERLY REPORT ON EMERGING TECHNICAL CONCERNS

Purpose: To inform the Commission of newly emerging technical concerns and proposed approaches for their resolution.

Background: In the November 13, 1989, staff requirements memorandum (SRM 891025), the Commission asked the staff to keep it informed of new issues on a quarterly basis and to propose approaches for resolving these issues. The Commission also asked the staff to work closely with industry for a timely resolution of each technical issue.

Summary: During this quarter, the staff has identified one issue that it views as an emerging technical concern. This report describes that issue and the staff's current efforts in dealing with it.

Discussion: The staff has identified the following technical concern that should be brought to the attention of the Commission:

Regulatory Status of Non-Safety Systems in Advanced Passive Reactors Performing Traditional Safety Functions

During the staff's continuing review of the Electric Power Research Institute (EPRI) requirements document for Advanced Passive Reactors, the staff noted that many systems traditionally considered to be safety systems have been changed to non-safety systems in that document. EPRI has treated these systems as non-safety systems because it concluded that the passive safety systems provide ultimate safety protection. Examples of traditional safety systems that are now regarded as non-safety systems include the high- and low-pressure emergency core cooling injection systems and the onsite AC power system (i.e., emergency diesel generators or combustion turbines).

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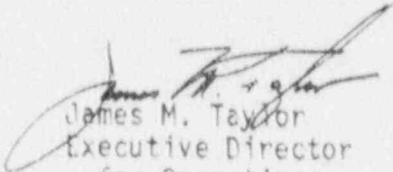
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The staff's preliminary review indicates that certain non-safety systems (e.g., onsite AC power) would contribute significantly in ensuring plant safety. We expect that the design-specific probabilistic risk assessments (PRAs) will show the importance of these systems in meeting the Commission's safety goal and EPRI's safety objectives. The non-safety systems will be particularly important in compensating for the large uncertainties associated with the reliability of passive safety systems (i.e., uncertainties associated with complex thermal-hydraulic phenomena and equipment in new applications that the staff has not yet evaluated). It is important to recognize that certain initiating events, such as a loss of offsite power or station blackout, may be more likely in the advanced passive reactor designs, and that the reliability of both the active non-safety systems and the passive safety systems will be crucial in finding the designs acceptable. The regulatory status of the non-safety systems needs to be clarified to permit determinations to be made on the applicability of the regulations and General Design Criteria, the industry codes and standards, and quality assurance programs (if any), to the design, procurement, construction, installation, maintenance, and operation of a system.

To address this issue, the staff will perform a study to determine the level of reliability needed for both the non-safety systems and the passive safety systems. This study will address reliability on a broad systems level, and will only establish order-of-magnitude estimates for the needed reliability.

The staff first discussed this subject with EPRI during the staff's November 29, 1990, meeting on Advanced Passive Reactors. The staff will develop positions and supporting information and present them to the Commission as policy issues, before presenting them to EPRI as NRC positions or requirements.

In March 1991, we will send our next update on emerging technical concerns to the Commission.


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