



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

January 31, 1997

MEMORANDUM TO: Ashok C. Thadani, Acting Deputy Director
Office of Nuclear ~~Reactor~~ Regulation
FROM: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards
SUBJECT: STEAM GENERATOR INTEGRITY RULEMAKING

During the joint meeting of the ACRS Subcommittees on Materials & Metallurgy and Severe Accidents on January 9, 1997, the staff discussed the broad issues related to risk-informed, performance-based regulation, as well as the status of developing the steam generator integrity rule, the associated regulatory guide, and the technical analyses. This meeting was also intended to discuss the staff response to ACRS comments and recommendations contained in its November 20, 1996 letter to the Executive Director for Operations concerning the proposed steam generator integrity rule and the associated regulatory guide.

In fact, the January 9 meeting was primarily devoted to a discussion of the staff's approach to completing the Standard Review Plan sections and supporting documentation associated with risk-informed, performance-based regulation. In addition, a discussion was held on the approach for developing the steam generator integrity rule, the related regulatory guide, and other documents. Although these discussions were somewhat helpful to the members, this meeting did not completely resolve the comments and recommendations included in the November 20, 1996 ACRS letter. During the Subcommittee meeting, the staff expressed an intent to incorporate some of the comments and recommendations into the proposed documents; however, the extent to which the ACRS concerns would be reflected in these documents was not clear.

The meeting did allow the members to sharpen the focus of some of their concerns. Many of the concerns of the members are about how the specific performance criteria and guidance described in the regulatory guide relate to risk. Much of the difficulty that the members have had in reviewing the steam generator integrity rule and regulatory guide is due to the unavailability of written documents (e.g., NUREG and regulatory analyses) that describe the bases for the performance criteria. The information provided in general terms by the staff during Subcommittee meetings was

insufficient for the members to clearly understand the bases for such criteria. The Committee requests that the staff, at the next Subcommittee meeting, respond to the ACRS comments and recommendations included in the November 20, 1996 letter and to the following concerns raised by individual Subcommittee members:

- The performance criteria, which are intended to ensure that the risk due to thermally induced tube failures during severe accidents is acceptable, appear to introduce new requirements. The basis for the introduction of these requirements is unclear. Very little explanation has been provided that clearly identifies how the performance criteria and program requirements are related to risk analyses.
 - The staff should explain how the proposed rule will transition from the existing deterministic regulatory process, which is based on design-basis accident information, to a risk-informed, performance-based process, which is based on risk information.
 - The regulatory guide does not clearly state the objectives, functional requirements, performance requirements, verifications, acceptable solutions, and alternative solutions associated with the performance criteria.
 - The staff should clarify whether performance criteria are derived from top level risk requirements or from defense-in-depth considerations. The staff should identify the number of and bases for the defense-in-depth criteria.
 - The regulatory guide does not describe, in all cases, a standard for complying with the performance criteria or program requirements.
 - The regulatory guide does not, in all cases, identify how the licensees can demonstrate that reasonable assurance has been achieved.
 - The staff should explain the basis for the 0.05 tube failure per year criteria -- in particular, how the value for steam generator tube ruptures is an appropriate allocation of the total conditional containment failure probability; how the criteria for tube plugging are derived from inspection findings, leak rates, or voltage criteria; or how plugging criteria are derived from a probability of tube failure.
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- The regulatory guide does not explain how licensees should demonstrate that the spontaneous probability of steam generator tube failures will be below the assumed failure criteria.
- The staff should explain the basis for the allocation of 20 percent of the tube failure probability criteria to each degradation mechanism.

The Committee looks forward to meeting with you and your staff in the near future. If you have any questions or need additional information, please contact Noel Dudley of my staff at 415-6888.

cc: ACRS Members
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