



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

May 23, 1994

MEMORANDUM FOR: Commissioner Remick

FROM: James M. Taylor  
Executive Director for Operations

SUBJECT: SECY-94-084 — POLICY AND TECHNICAL ISSUES ASSOCIATED WITH THE REGULATORY TREATMENT OF NON-SAFETY SYSTEMS IN PASSIVE PLANT DESIGNS

This is in response to your memorandum dated May 10, 1994, in which you requested further clarification on several items discussed at your meeting with the staff on May 2, 1994, regarding the Operational Reliability Assurance Program (O-RAP) for advanced light water reactor (ALWR) plants.

Prior to addressing your specific question, it may be appropriate to provide additional information regarding the Nuclear Energy Institute (NEI) letter dated April 22, 1994, (copy enclosed), that the staff referred to during the meeting in which NEI discussed the use of probabilistic risk assessment (PRA) to support operations for advanced reactors. In the enclosure to that letter, NEI expressed industry's understanding of the relationship between PRA, O-RAP, and the maintenance rule, indicating that industry was aware of the similarities and differences between the maintenance rule and O-RAP. NEI acknowledged that ". . . reliability assurance activities would essentially constitute an expanded implementation of the maintenance rule because they would address not just maintenance preventable functional failures, but also failures due to causes such as design, personnel training, or procedural deficiencies." Thus, industry recognizes that by expanding the functional areas covered by the maintenance rule, the requirements of the O-RAP could be satisfied. A future ALWR licensee may only need to expand an existing program rather than create a new redundant program.

Industry representatives also reiterated their understanding of the O-RAP at an April 25, 1994, meeting with the staff regarding ALWR design certification issues. During that meeting, they stated that the PRA would be used to support O-RAP (i.e., expanded maintenance rule implementation), and that the NRC would be requested to endorse an industry reliability assurance guideline document, similar to NUMARC 93-01, that would include PRA update guidelines. In its April 22, 1994, letter, NEI also proposed a separate industry-developed document "analogous to NUMARC 93-01" for implementing reliability assurance activities. This separate document would be the mechanism for providing the implementation guidelines for O-RAP, rather than revising NUMARC 93-01 to add

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O-RAP activities to the maintenance rule implementation guidance. The staff and NEI expect to continue a dialogue on the development of guidance for the maintenance and use of PRA for advanced reactors.

In your May 10, 1994, memorandum, you acknowledged the NRC needs to assure that non-safety systems are handled, commensurate with their safety significance and requested clarification of the potential duplication of O-RAP with existing regulatory requirements (e.g., 10 CFR Part 50, Appendix B and the maintenance rule). You specifically requested the staff advise you as to whether the non-safety systems requiring regulatory treatment commensurate with their safety significance, as identified in the staff's FDA, will or could be covered by 10 CFR Part 50, Appendix B requirements during the combined license (COL) period prior to fuel load.

As discussed with you on May 2, 1994, the scope of structures, systems, and components (SSCs) for the RAP contains only those that are risk-significant and does not distinguish which are safety and nonsafety-related SSCs. The RAP can be thought of as an inclusive performance-based program that integrates aspects of existing programs (e.g., maintenance, surveillance testing, inservice testing, inservice inspection, and quality assurance). As discussed above, using an expanded implementation of the maintenance rule, several aspects of the RAP could be integrated into an existing maintenance program. Similarly, the aspects of the quality assurance program (QAP) of 10 CFR Part 50, Appendix B could be adapted to meet the requirements of RAP without duplicating an existing program. However, the staff has not mandated that the Appendix B quality assurance program or the maintenance rule be used to meet similar aspects of the RAP. The essence of this performance-based regulation would allow a future ALWR licensee flexibility to meet the RAP requirements with existing programs, modifications to existing programs, or newly developed programs that incorporate the techniques available at the time an application is submitted.

At the time of licensing, the staff would review the details of how an ALWR applicant proposes to satisfy the applicable regulation for RAP, similar to the process that was used to establish the site-specific QAPs in the past. The staff would encourage the industry to develop a standard approach to implementing a RAP that could be used for all advanced reactor designs. Such a standard could provide criteria for RAP implementation, but in keeping with the performance-based approach to regulation the staff would continue to allow licensees flexibility in implementing a RAP utilizing other approaches.

NRC will verify RAP implementation by review and inspection throughout the entire life of the plant since the RAP is a plant life cycle program. This approach is addressed in SECY-94-084 (p. 20) where the following appears: "The staff would verify implementation of the RAP plan with inspections and audits during detailed design, procurement, fabrication, construction, and testing prior to fuel load and would continue to inspect and audit implementation of the reliability assurance program for the duration of the license." A standard review plan (SRP) section for RAP similar to the performance-based SRP Section 17.3 will be developed for the COL application

review of RAP. A performance-based inspection procedure to specifically address the RAP will also be developed, although, for the most part, the inspections could be covered by existing NRC inspection procedures currently in the 2512, 2513, 2514, and 2515 inspection programs. Those existing inspection procedures would need only minor modification to include additional guidance regarding use of PRA insights, risk-significance, and reliability methods.

You also requested clarification of what the staff is requesting the Commission to approve for D-RAP and O-RAP. The staff continues to recommend that the Commission approve its position that requirements concerning reliability assurance should be incorporated into the design-specific rulemaking for an applicant for design certification and for an applicant for a combined license that references a certified design. The information discussed above regarding the April 22, 1994, NEI letter and the April 25, 1994, meeting with NEI was received after SECY-94-084 was written; however, the new material does not change the staff's position on RAP. The initiatives proposed by the industry indicate an understanding of the similarities and differences between the O-RAP and the maintenance rule, the need for a separate guidance document to address those differences, and the industry's willingness to participate in the development of an O-RAP guidance document.

Specifically, in SECY-94-084, the staff is proposing a regulation for a Reliability Assurance Program (RAP) plan that requires an applicant for design certification to submit: a description of the reliability assurance program used during the initial design that covers the scope, purpose, and objectives; the methodology used to evaluate and prioritize the SSCs in the certified design based on their degree of risk-significance; and a list of SSCs designated as risk-significant. For those SSCs designated as risk-significant, an application for design certification must also contain: the methodology used to determine dominant failure modes that considered industry experience, analytical models, and existing requirements; and key reliability assumptions and risk insights from the PRA, including any operation, maintenance, and monitoring activities that should be considered by a COL applicant that references the standard design.

Additionally, in SECY-94-084, the staff is also proposing a regulation that would require each applicant for a combined license that references a certified design to submit: a proposed reliability assurance program plan, applicable for the entire life of the plant, that incorporates the RAP from the certified design, and the proposed tests, inspections, analyses, and acceptance criteria, as required by 10 CFR 52.79(c), for the reliability assurance program plan. Finally, each licensee, under 10 CFR Part 52, would implement the reliability assurance program plan approved by the NRC.

Finally, you requested that the staff provide other options appropriate to accomplish the staff's objectives. The staff's objectives could be achieved by amending existing regulations (e.g., 10 CFR Part 50, Appendix B, the maintenance rule, and 10 CFR Part 52) to expand the scope of SSCs under consideration, and to require the use of PRA, as well as deterministic and

operating experience, to satisfy the requirements proposed in the RAP. This would be less desirable from the standpoint of allowing ALWR design certification applicants and COLs less flexibility in structuring and implementing their programs. In addition, any rulemaking activities would require substantial time and resources by both the industry and staff to accomplish, with no obvious advantage over the approach being recommended by the staff.

Original signed by  
James M. Taylor

James M. Taylor  
Executive Director  
for Operations

Enclosure:  
As stated

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