December 8, 1999

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Meserve:

SUBJECT: DRAFT COMMISSION PAPER REGARDING THE 120-MONTH UPDATE REQUIREMENT FOR INSERVICE INSPECTION AND INSERVICE TESTING PROGRAMS

During the 468th meeting of the Advisory Committee on Reactor Safeguards, December 2-4, 1999, we reviewed the options proposed by the staff regarding the current requirement for licensees to update inservice inspection (ISI) and inservice testing (IST) programs every 120 months to the most recent Edition of the American Society of Mechanical Engineers (ASME) Code incorporated by reference in 10 CFR 50.55a, "Codes and Standards." Our Subcommittee on Materials and Metallurgy also reviewed this matter during its meeting on December 1, 1999. During this review, we had the benefit of discussions with representatives of the NRC staff, ASME, and the Nuclear Energy Institute (NEI). We also had the benefit of the documents referenced.

Recommendation

We recommend that the Commission adopt Option 2 proposed by the staff and retain the 120-month update requirement for ISI and IST programs in 10 CFR 50.55a.

Background

The staff issued a proposed amendment to 10 CFR 50.55a on April 27, 1999, to solicit public comment on a proposal to eliminate the current requirement that licensees update their ISI and IST programs every 120 months to the most recent edition of the ASME Code incorporated by reference in 10 CFR 50.55a. In a letter dated April 19, 1999, we recommended against eliminating this requirement. The NRC staff held a public workshop on May 27, 1999, to discuss the update requirement. In a Staff Requirements Memorandum dated June 24, 1999, the Commission directed the staff to evaluate public comments on the update requirement and develop options and recommendations on the retention or elimination of this requirement. The Commission also directed the staff to discuss this issue further with the ACRS.

The staff has identified three options:

OPTION 1: Replace the 120-month ISI/IST update requirement with a baseline of ISI and IST requirements, and allow voluntary updating to subsequent NRC-approved Code editions and addenda unless the baseline is revised based on 10 CFR 50.109, where the initial baseline will consist of:

Option 1.A. the 1989 Edition of the ASME Code for ISI of Code Class 1, 2, and 3 components (including supports) and for IST of Code Class 1, 2, and 3 pumps and valves; the 1992 Edition with the 1992 Addenda of Subsections IWE and IWL of the ASME Code for ISI of Class MC and Class CC components and their integral attachments; the 1995 Edition with the 1996 Addenda of Appendix VIII of the ASME Code, Section XI, with limitations and modifications specified in 10 CFR 50.55a,

Option 1.B. the 1995 Edition with the 1996 Addenda of the ASME Code with the limitations and modifications specified in the NRC regulations, or

Option 1.C. a later version (e.g., the 1998 Edition) of the ASME Code with appropriate limitations and modifications.

OPTION 2: Retain the current 120-month ISI/IST update requirement.

OPTION 3: Authorize plant-specific alternatives to the 120-month ISI/IST update requirement.

Discussion

The staff evaluated the update options in terms of the strategic goals of the Commission: (1) maintaining safety, (2) increasing public confidence, (3) reducing unnecessary regulatory burden, and (4) making NRC activities and decisions more effective, efficient, and realistic. Although the staff concludes that no particular option has an overwhelming advantage over the other options, it recommends the adoption of Option 1B, which eliminates the mandatory 120-month update. We believe that the later version of the ASME Code would provide technically superior baselines for the ISI and IST programs than the 1989 Edition, which is now over ten years old.

We agree with the conclusion of the staff that any of the options will maintain an acceptable level of safety. Each option purports to include provisions to update ISI and IST programs, although the criteria to require updating differ among the options. Furthermore, the analyses performed in support of the development of risk-informed inspections for Class 1, 2, and 3 piping and those done to support resolution of Generic Safety Issue (GSI)-190 show that ISI has a relatively modest impact on core damage frequency (CDF). We have not reviewed the analyses done to support risk-informed IST programs, but we believe that they would probably also show relatively modest impacts on CDF. This is not surprising. Because failures of these components were anticipated in the design of nuclear power plants, effective mitigation systems and procedures have been developed. However, because assurance of the integrity the reactor coolant pressure boundary and the containment is one of the cornerstones of the NRC regulatory system, ISI and IST programs have been required to provide additional assurance, through application of the defense-in-depth philosophy, of the integrity of these barriers and to compensate for uncertainties.

NEI and the staff argue in support of Option 1 that the current ASME Code requirements have reached such a level of maturity that further updating will provide little benefit. We believe that the review of the past decade of experience presented to us by the ASME demonstrated that there were significant changes to the ISI, IST, and operations and maintenance requirements that improved the effectiveness and efficiency of these programs and that developments in technology and operating experience could lead to additional changes in the inspection programs. Changes are not introduced in the ASME Code requirements frivolously. The ASME Code represents the consensus of a broad-based group of experts that includes strong utility representation (approximately 30% of the Section XI membership) as well as

representation from manufacturers, vendors, the NRC, and other engineering and consulting organizations.

Under Option 1, any mandated updates to the ISI and IST programs would have to pass the 10 CFR 50.109 backfit criteria. The 50.109 evaluation is not well suited to assess the appropriateness of defense-in-depth requirements, which are intended to address uncertainties that are difficult to quantify. In our May 19, 1999 report, we outlined an approach for developing a systematic methodology for the evaluation of defense in depth; however, lacking such a methodology at the present time, decisions on defense in depth will have to be based on judgment. The collective judgment of the broad-based group of experts represented by the ASME Code should be reflected in the inspection requirements.

Sincerely,

/s/

Dana A. Powers
Chairman

References:

1. Memorandum dated November 18, 1999, from William D. Travers, Executive Director for Operations, NRC, for the Commissioners, SECY-99-XXX, Subject: 120-Month Update Requirement for Inservice Inspection and Inservice Testing Programs (Predecisional Draft).
2. ACRS letter dated May 19, 1999, from Dana A. Powers, Chairman, ACRS, to Honorable Shirley A. Jackson, Chairman, NRC, Subject: The Role of Defense In Depth in a Risk-Informed Regulatory System.
3. Memorandum dated June 24, 1999, from Annette L. Vietti-Cook, Secretary, NRC, to William D. Travers, Executive Director for Operations, NRC, Subject: Staff Requirements - Reconsideration of SECY-99-017 (Proposed Amendment to 10 CFR 50.55a).
4. Letter dated April 19, 1999, from Dana A. Powers, Chairman, ACRS, to William D. Travers, Executive Director for Operations, NRC, Subject: SECY-99-017, “Proposed Amendment to 10 CFR 50.55a.”
5. Table provided by ASME during ACRS meeting, December 2-4, 1999, “Important Section XI SG NDE Code Changes and Code Cases, 1989 Addenda through 1999 Addenda,” Revision 2, 11/1/99.
6. Memorandum dated November 12, 1999, from Ashok C. Thadani, Director, Office of Nuclear Regulatory Research, NRC, to John T. Larkins, Executive Director, Advisory Committee on Reactor Safeguards, Subject: Generic Safety Issue-190, “Fatigue Evaluation of Metal Components for 60-Year Plant Life.”