

June 14, 2007

Mr. Alex Marion
Executive Director
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, D.C. 20006-3708

SUBJECT: STAFF RESPONSE TO NEI PROPOSED REVISION TO 10 CFR 50.55A

Dear Mr. Marion:

In a public meeting held in the U.S. Nuclear Regulatory Commission (NRC) headquarters on April 3, 2007, you presented the Nuclear Energy Institute's (NEI's) proposal for revising Title 10 of the Code of Federal Regulations, (10 CFR) 50.55a, Codes and Standards. The purpose of this letter is to provide you with the NRC's impressions with the proposed revision.

The staff agrees with you that the timeliness of incorporating by reference newer editions of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code in 10 CFR 50.55a should be improved in order for licensees to take advantage of ASME Code changes without having to submit relief requests. The staff has recently issued for public comment its proposed rulemaking to incorporate by reference the 2004 Edition of the ASME Code, and plans to begin its review of the 2007 Edition of the ASME Code later this year.

The NRC is supportive of efforts and proposals to improve the efficiency and effectiveness of 10 CFR 50.55a. However, the staff does not agree with the approaches proposed in the NEI paper. In summary both Options 1 and 2 would virtually eliminate regulatory oversight of implementation of ASME Code requirements. As for Option 3, it appears that the approach described could be implemented under 10 CFR 50.69. A detailed discussion of the staff's comments is provided for your information in the Enclosure. The staff would entertain continuing dialogue on revising 10 CFR 50.55a should a different alternative be developed that addresses the enclosed comments.

If you have any questions, please contact Terence L. Chan of my staff at 301-415-2768.

/RA/

John A. Grobe, Associate Director
for Engineering and Safety Systems
Office of Nuclear Reactor Regulation

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STAFF RESPONSE TO NEI'S PROPOSED REVISION TO 10 CFR 50.55A

I. NEI PROPOSED REVISION

In a public meeting held in the NRC headquarters on April 3, 2007, NEI presented a high level proposal for revising Title 10 of the Code of Federal Regulations (10 CFR) 50.55a, Codes and standards. The meeting summary and NEI's presentation slides can be found in ADAMS (ML071080139). NEI proposed the following three options which are contained in the NEI white paper, *Improving the Effectiveness of 10 CFR 50.55a, Codes & Standards*, (ADAMS ML070940157).

Option 1 – Revise 10 CFR 50.55a to require that licensees maintain the code of record (i.e., editions and addenda of the ASME Code) in the UFSAR per 10 CFR 50.71. Licensees would change the code of record or Code requirements based on 10 CFR 50.59.

Option 2 – Modify 10 CFR 50.55(a) to permit licensees to change codes and standards of record if a documented evaluation shows that compliance with a requirement of the ASME Code would result in hardship, could be satisfied by an alternative, and is impractical. The revised regulation would specify the criteria necessary to support the implementation of these changes [to the Code editions or requirements] without prior NRC approval.

Option 3 – Revise 10 CFR 50.55a to permit licensees that have adopted ASME risk-informed ISI, IST, and repair/replacement programs to make changes to the programs and to the codes and standards of record applicable to those programs without prior NRC approval if the changes can be demonstrated to be consistent with 10 CFR 50.69.

II. STAFF OBSERVATIONS

The following observations may apply to more than one of NEI's options but are listed under the most applicable option.

OPTION 1

1. The NRC staff believes that it would be contrary to safety to permit regulating the reactor coolant pressure boundary and high safety significant Class 2 and 3 components via the 10 CFR 50.59 process. This is inconsistent with the regulatory approach for fuel, the first barrier against radionuclide release and is inconsistent with the regulatory approach for inspection and testing of the containment pressure boundary, the third barrier against radionuclide release.

2. All three options appear to be based on the concept of eliminating the incorporation by reference of the ASME Code in 10 CFR 50.55a. When licensees change commitments to existing or future ASME Code requirements, or implement future unapproved ASME Code editions or addenda, they would be changing the licensing basis represented by the NRC staff's prior review and approval with little or no regulatory oversight.

ENCLOSURE

3. Licensees could make unreviewed changes to Code commitments based on differing interpretations of the safety significance of an issue. Three recent examples of differing industry interpretations of the safety significance of an issue are as follows:

- When MRP-139, *Primary System Butt Weld Inspection and Evaluation Guidelines*, was issued, industry indicated that they did not consider primary water stress corrosion cracking to be a safety significant issue. Our current understanding is that this view has not changed.
- During recent weld overlay applications at Byron Unit 1, the licensee proposed the use of weld overlay preservice flaw acceptance criteria that the ASME Code did not permit, and for which the NRC staff rejected. Subsequently, at the ASME Code, Section XI meetings, a representative of a weld overlay vendor proposed a Code revision similar to that proposed earlier by Byron. The ASME Code committees rejected the proposal.
- The industry conclusions regarding the Wolf Creek pressurizer nozzle weld flaws were that no additional actions needed to be taken by licensees, notwithstanding the extensive circumferential flaws found and the first discovery of multiple circumferential flaws in the same weld.

4. Licensees and applicants could choose not to follow the requirements of the ASME Code in the design, inspection and testing of safety-related components. In such cases it is not clear what range of codes or standards licensees could use.

5. The ASME Code is being updated annually. This option would allow licensees to selectively use certain editions of the Code or certain requirements of the ASME Code Section that would be favorable to their application for which the staff may view as unacceptable.

6. The proposed options would not promote consistency in the application of the ASME Code because each licensee could interpret the need for, or significance of, certain requirements of respective codes and standards.

7. The staff would need to perform backfit analyses to impose those ASME requirements that licensees have not implemented or revised but for which the staff disagrees with licensees' actions. The NRC staff would shoulder the burden of resolving the issue and this burden could present a significant challenge to NRC staff resources. It is difficult to review challenging individual changes in licensees' commitments to codes and standards for design, inspection, and testing of safety-related components in terms of objective qualitative arguments and the low delta risk that accompanies quantitative arguments in terms of a backfit analysis.

8. The NRC regional inspectors would need to provide oversight on how licensees implement the ASME Code under the proposed revision to 10 CFR 50.55a. However, it is not the role or within the skill set of the NRC regional inspectors to evaluate the acceptability of changes to commitments to codes and standards under the proposed revision to 10 CFR 50.55a.

9. The ASME Code lags behind the latest technology that licensees want to use in the field. For example, weld overlay technology was used to repair degraded piping in BWRs since the 1980s. However, the requirements for the weld overlay technology for PWR dissimilar metal welds are still not fully incorporated in the ASME Code as of 2007. In such case, the staff

believes it is necessary to exercise oversight to assure that application of the latest technology used by licensees will not compromise plant safety.

OPTION 2

1. Option 2 discusses acceptance criteria by which licensees would make changes to the ASME Code requirements without prior NRC approval. The staff is not clear how broad, generic criteria can be established to justify the changes to the Code requirements because Code requirements are numerous, wide ranging, and specific (e.g., requirements for the weld filler metal for the weld overlay application). It would be difficult to avoid subjective acceptance criteria which could lead to various interpretations and thus inconsistency in the application of the ASME requirements. This is not an entirely new idea. There have been unsuccessful proposed code cases in the past that reflected the idea of not having to request relief under certain criteria in the code cases. From these past interactions, it does not appear that either qualitative or quantitative criteria could be developed.

2. By way of options 1 and 2, it seems that NEI is requesting reduction in regulatory oversight for components that they believe are not safety significant. The staff has reduced regulatory oversight of safety-significant and less-safety-significant components through risk-informed regulations in 10 CFR 50.69. However, 10 CFR 50.69 does not permit reduction in regulatory oversight for reactor coolant pressure boundary components because of the Commission's belief that they are safety significant. The Commission has decided that further reduction in regulatory oversight beyond those allowed by 10 CFR 50.69 would compromise the plant safety. In Options 1 and 2, NEI is requesting to reduce additional requirements for reactor coolant pressure boundary components beyond what 10 CFR 50.69 offers. Therefore, the proposed revision would not be consistent with 10 CFR 50.69.

3. Options 1 and 2 would adversely affect the fundamental aspect of consistency and compliance with respect to the design and construction across the fleet of reactors because individual licensees could change ASME Code requirements without prior NRC approval. By the regulatory oversight via 10 CFR 50.55a, the NRC ensures consistency and compliance in the design and construction of nuclear reactors in accordance with ASME Code requirements.

OPTION 3

The staff is not clear on the benefits of option 3. It is not clear what the difference is between the NEI proposal and the existing situation given 10 CFR 50.69.

CONCLUDING OBSERVATIONS

During the meeting on April 3, 2007, NEI made the observation that the industry believes that NRC's process reflected in 10 CFR 50.55a is outdated and in need of a radical change. We believe that this observation misses a fundamental issue. The fundamental issue is that inspection, flaw evaluation, repair and replacement of safety related pressure boundary components are in a constant state of evolution as new issues arise and as technology changes. Typically the ASME Code process is in a catch-up mode with respect to these issues and changes in technology. This problem is not helped by the difference that exists in the industry between the EPRI Materials Reliability Program (MRP) and the ASME Code.

For example, in the PWR dissimilar metal weld issue, EPRI MRP does not believe there needs to be a code case to require enhanced examination of dissimilar metal welds, whereas the ASME Code determined that development of such a code case was prudent. For situations where regulatory relief from ASME Code requirements can be anticipated as a result of an emerging issue, NRC is supportive of working with the industry to find a more efficient solution than the current regulatory process.

III. STAFF CONCLUSIONS AND RECOMMENDATIONS

The staff agrees with NEI that the regulatory process of incorporation by reference of the ASME Code in 10 CFR 50.55a should be revised and improved upon to remove unnecessary regulatory burden on licensees and vendors. The staff understands that the regulatory process of 10 CFR 50.55a represents a burden on licensee resources. However, the staff has been directed by the Atomic Energy Act of 1954 to protect the public health and safety from the commercial operation of nuclear power plants through, in part, oversight of safety related pressure boundary components.

The staff does not agree with proposed Options 1 and 2 because both options would virtually eliminate regulatory oversight of implementation of ASME Code requirements. As for Option 3, it is not clear to the staff what the difference is between the NEI proposal and the existing situation given 10 CFR 50.69.

The staff has contemplated improvements to 10 CFR 50.55a as the rule has become more voluminous and difficult to navigate. NEI's proposal may motivate the staff to push the 10 CFR 50.55a improvement initiative with greater urgency. Steps the staff has taken and is considering taking include the following regulatory improvement initiatives:

1. The Office of Nuclear Reactor Regulation of the NRC has initiated a task group to study the 10 CFR 50.55a revision process.
2. The Office of General Counsel of the NRC has suggested reorganization of the 10 CFR 50.55a to make the requirements of 10 CFR 50.55a more tractable and less cumbersome. Implementing a reorganization of the rule would be a major effort that would require the participation of staff from various NRC offices.