May 14, 2008

MEMORANDUM TO: Michael Mayfield, Director
Division of Engineering
Office of New Reactors

FROM: Christian Araguas **/RA/**
Technical Assistant
Division of Engineering
Office of New Reactors

SUBJECT: SUMMARY OF PUBLIC MEETING HELD APRIL 9, 2008, WITH THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) REGARDING NEW REACTOR LICENSING

On April 9, 2008, the U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting in Rockville, MD with members of the American Society of Mechanical Engineers (ASME) Board on Nuclear Codes and Standards (BNCS). The NRC and BNCS discussed the licensing process in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," and its relationship to the ASME Boiler & Pressure Vessel Code for the design and construction of nuclear power plants. The purpose of the meeting was to identify the key ASME Nuclear Codes and Standards issues relative to the 10 CFR Part 52 licensing process, and to define the processes for addressing these issues.

The NRC started the meeting with a presentation of the different licensing processes under 10 CFR Part 52. Specifically, the staff provided brief discussions on early site permits, design certifications, combined licenses, standard design approvals, and manufacturing licenses. The staff also presented its regulatory perspectives on new plant construction, focusing on the construction inspection program.

ASME provided the staff with a brief history of the ASME Boiler Pressure Vessel (BPV) Code structure and philosophy. The ASME also provided an overview of the requirements for design standardization, the nuclear accreditation process, and the framework in place to address ASME BPV code initiatives for new reactors.

Following the formal presentations, the staff and ASME began discussions on six key issues on ASME Nuclear Codes and Standards and 10 CFR Part 52 (see enclosure 2). The first issue concerned ASME Code NCA-1140. ASME said that the language in the code is inconsistent with language in 10 CFR Part 52. Currently NCA-1140 sets requirements on which code edition and addenda to implement in the design specifications for a construction permit. Initially, ASME wrote the language in ASME code NCA-1140 to align with the 10 CFR Part 50 licensing

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process. ASME proposed an addition to the code to expand the scope to include the new reactor licensing process. The NRC agreed with this approach but commented that the proposed language was still inconsistent with licensing processes in 10 CFR Part 52 and that it needed to contain language such as “certified design” or “combined license.” ASME agreed to reword the addition to the code and provide the staff with a draft for comment.

The second issue raised was in regards to revised piping seismic design criteria contained in the 1994 Addenda to the ASME Code, Section III. The ASME provided a background discussion on this issue. They said that the NRC staff had not endorsed the criteria because of concerns with the technical basis developed to establish these criteria. Currently, the NRC and ASME have come to resolution on all but one issue relating to dynamic strain aging of certain carbon steels at temperatures greater than 300 °F. In light of this remaining issue, ASME asked the staff which code edition should be used for new reactor licensing. The NRC responded that an applicant should refer to the code edition currently endorsed in 10 CFR 50.55(a), “Codes and Standards.” The NRC also said that if an applicant wants to implement a more recent code not currently endorsed by the staff, processes exist to do so (e.g., exemption request, interim staff guidance process). In addition, following issuance of the combined license, a licensee may submit a license amendment request to incorporate a more recent code. The ASME said that it appreciated the staff’s insights on this matter and requested a followup meeting to discuss the remaining piping seismic design criteria issue. The NRC agreed to have another meeting.

The third issue raised was in regards to environmental fatigue qualification. The ASME discussed with the staff its intent to develop a nonmandatory appendix on environmental fatigue methods. The ASME said that the sections of the proposed appendix would then be developed as individual code cases. ASME discussed the need to identify the best approach for addressing environmental fatigue using the alternative methods in new reactor licensing. The staff said that in the interim, applicants are currently able to use established NRC guidance on environmental fatigue. The staff also said that submitting the code cases would ensure a review for endorsement by the NRC, but to the extent that an applicant would like to incorporate these code cases or any newer codes, processes exist for an applicant to do so prior to endorsement by the staff. Both the NRC and ASME agreed to another public meeting to discuss this issue further.

The ASME shared its plans to develop a new joint ASME Section III and Section XI task group to address inspection requirements and incorporate operational experience into design requirements. The ASME said that the task group would consist of designers, manufacturers, regulators, and owners. The ASME also said that as the task group identifies issues, the ASME will develop code changes and code cases. In addition, the ASME discussed its intent to require performance demonstrations for some radiographic testing and ultrasonic testing examinations performed during fabrication.

The fourth and fifth issues identified by ASME again raised the question on how best to approach incorporating these emerging requirements for new reactor licensing. The staff and ASME discussed this issue and agreed that code cases developed by the joint task group would be helpful and should be submitted to the NRC for endorsement. The staff also reiterated its early comment that processes exist for applicants to use codes or code cases that have not been endorsed by the staff.

The last issue raised was in regards to risk-informed inservice inspection (RI-ISI) for new reactors. The ASME said that RI-ISI programs for piping are being implemented at over 95 percent of the operating plants in the nation. The ASME also said that RI-ISI programs for piping at operating plants are cost effective and provide defense-in-depth with acceptable levels of quality and safety. The ASME discussed with the staff the challenges in making progress in this area due to resource limitations within industry and the regulator. The ASME requested that the NRC reengage with ASME to resolve this issue in support of new reactor licensing. The staff said that it is still too early for the NRC to engage on this issue. The staff said that it is willing to work with ASME on this issue but that ASME has to work through some of the existing challenges prior to NRC involvement.

The presentations and discussions held were useful to both the ASME and the NRC. The meeting was very well attended. Enclosed is the list of attendees as well as presentation materials.

Enclosures: 1. List of Attendees
2. Questions and Topics for Structured Discussion
3. Presentation Material

cc w/enclosure: See next page

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LIST OF ATTENDEES

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April 9, 2008 (8:30 a.m. – 5:00 p.m.)
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Enclosure 1

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Questions and Topics for Structured Discussion
ASME/NRC Meeting – April 2008

(1) Per current ASME Boiler and Pressure Vessel Code, designs must be done to Code Editions within 3 years of the contract date. Efforts underway within ASME Subcommittee III Subgroup on General Requirements to address this matter. Discussion of approach and progress will be provided.

(2) Seismic Rules: ASME is working to address last remaining topic on seismic requirements. Which Code Edition is to be used in the new reactor licensing initiatives as this last requirement is being established?

(3) Environmental Fatigue Qualification – The ASME Subgroup on Design of ASME Subcommittee III is implementing alternative methods via the use of ASME Code Cases to address fatigue effects (F_{EN} method, Water S-N Curves, Flaw Tolerance). What is best approach to use these emerging alternative approaches in new reactor licensing initiatives?

(4) Inspection: A new joint ASME Section III and Section XI Task Group will be addressing inspection requirements and incorporation of operational experience into design requirements. What is best approach to incorporate these emerging requirements in new reactor licensing initiatives?

(5) Performance Demonstration may be required for radiographic testing (RT) and ultrasonic testing (UT) examinations performed during fabrication. If these requirements are incorporated into ASME Section III, what is best approach to incorporate these requirements in new reactor licensing initiatives?

(6) There is interest in implementing risk-informed inservice inspection (ISI) programs at the start of operation of new reactors. Discussion will be held on approach for developing risk-informed ISI programs without traditional ASME Section XI ISI program to serve as baseline