

October 27, 2003

Mr. Richard E. Gimple, Chairman
ASME Subcommittee on Nuclear Inservice Inspection
P.O. Box 411
Burlington, KS 66839-0411

Dear Mr. Gimple:

In a letter dated August 19, 2002, I discussed activities related to cracking in the control rod drive mechanism (CRDM) penetrations in the upper heads of a number of pressurized-water reactors (PWRs) and the efforts of the Task Group on Alloy 600/82/182 to develop changes in the American Society of Mechanical Engineers (ASME) Code to address degradation in these materials. Also identified were areas where ASME Section XI lacked specificity and its inspection requirements were inadequate for detecting reactor coolant pressure boundary (RCPB) leakage in a timely manner. The concern was that undetected leakage had the potential to result in corrosion of carbon steel components. I, therefore, requested that the ASME reevaluate its efforts on an urgent basis to address the adequacy of the industry inspection practices to identify and resolve boric acid degradation for the entire RCPB. The ASME did not formally respond to that letter. The recent identification of cracking on the bottom-mounted instrumentation penetrations at South Texas Unit 1 is another example of the need for improved RCPB examination, repair, and replacement requirements to be incorporated in both the ASME Code and the NRC's rules and regulations.

In February 2003, the U.S. Nuclear Regulatory Commission (NRC) issued orders (EA-03-009) to licensees of PWRs which established interim inspection requirements that would ensure adequate protection of public health and safety, based on the information gathered from NRC Bulletin 2002-02. Since that time, the NRC issued Regulatory Issue Summary 2003-13 on July 29, 2003, which summarizes the information gathered from Bulletin 2002-01 and the South Texas inspection related to cracking and leaks associated with Alloy 600/82/182 materials. The NRC issued Information Notice 2003-11 on August 13, 2003, which describes the leakage found on the bottom of the South Texas vessel.

On August 21, 2003, the NRC issued Bulletin 2003-02. This bulletin required PWR licensees with lower vessel head penetrations, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(f), to describe their plans to inspect the reactor pressure vessel lower head penetrations. The information obtained will form the basis for further actions that the NRC may deem necessary.

It is our understanding that the industry's Materials Reliability Project (MRP) has been developing alternative RCPB inspection guidance, which they anticipate will be found acceptable by the NRC and will supercede the guidance contained in the NRC's Order EA-03-009. It is also our understanding that the ASME planned to utilize the inspection guidance developed by the MRP, as appropriate, to modify or supplement the current ASME Section XI requirements for Alloy 600/82/182 pressure boundary applications. While the staff has encouraged this effort, the MRP has yet to give us alternative inspection guidance, and we are uncertain when such alternative guidance will be forthcoming.

It is our preference that RCPB inspection rules be developed by the ASME Code, and, if found acceptable by the NRC, incorporated by reference in our regulations. However, in the absence of sufficient progress by the industry and ASME on vessel upper head penetration inspection requirements, we have found it necessary to pursue rulemaking to amend 10 CFR 50.55a to include inspection requirements that would ensure the adequate protection of public health and safety. If and when the MRP and the ASME develop RCPB inspection criteria, the NRC will review them, and if found acceptable, we will then proceed to incorporate them by reference into NRC's rules and regulations.

Finally, we would like to bring to your attention a concern that has arisen as a result of the identified inadequacies of the ASME Code with regard to RCPB inspection requirements. Specifically, we believe the ASME should have a process that a) promptly notifies users when operating experience indicates that Code requirements are inadequate in certain areas and need to be supplemented and b) ensures that prompt action is taken to develop supplemental interim requirements that address the identified inadequacies until a permanent modification or supplement is developed. In the absence of timely action by ASME to notify users of emergent Code inadequacies, and to develop appropriate supplemental interim inspection requirements, the NRC will continue to take regulatory actions to notify our licensees of any ASME Code shortcomings and to put in place necessary requirements to assure public health and safety. I would like to reiterate my request for the ASME to reevaluate its activities related to these inservice inspection requirements and develop and issue a formal plan that identifies the areas where the Code needs to be enhanced. We would like this plan to also specify appropriate progress milestones for completion of Code changes that will ensure timely detection of flaws and leaks in the RCPB, preclude the occurrence of boric acid corrosion, and provide any changes needed in requirements for repair and replacement of RCPB welds and components. Supplemental inspection requirements included in subsequent editions or addenda of the ASME Code will be considered by the NRC for incorporation by reference in future 10 CFR 50.55a rulemaking actions.

Sincerely,

/RA/

Brian W. Sheron, Associate Director
for Project Licensing and Technical Analysis
Office of Nuclear Reactor Regulation

cc: C. Wesley Rowley, Chairman, BNCS
J. Ling, Associate Executive Director, ASME Codes and Standards
G.M. Eisenberg, Director, Nuclear Codes and Standards
G. C. Bishchoff, Project Director, Westinghouse Electric Company
A. Marion, NEI
P. McCullough, V.P. Accreditation, Inst. Of Nuclear Power Operations
G. B. Stramback, Regulatory Services Project Manager, GE Nuclear Energy
G. Vine, Sr. Washington Representative, EPRI
J.A. Gray, Jr., Chairman, BWR Owners Group
J.F. Mallay, Director, Regulatory Affairs, Framatome ANP
H.A. Sepp, Manager, Regulatory Licensing & Engineering, Westinghouse Electric Corp.

References: See next page

REFERENCES:

1. Order EA-03-009, "Interim Inspection Requirements for Pressure Vessel Heads at Pressurized Water Reactors," February 11, 2003
2. NRC Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs," August 9, 2002
3. Regulatory Issue Summary 2003-13, "NRC Review of Responses to Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," July 20, 2003
4. Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," March 18, 2002
5. Information Notice 2003-11, "Leakage Found on Bottom-Mounted Instrumentation Nozzles," August 13, 2003
6. Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," August 21, 2003

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Mechanism Penetrations in the Upper Heads of a Number of
Pressurized-Water Reactors

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