

October 23, 2002

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

SUBJECT: EMERGENT MATERIAL AND INSPECTION ISSUES

Dear Mr. Marion:

As more pressurized water reactors (PWRs) are in the process of ordering replacement reactor pressure vessel heads, and are scheduling outages to install these heads, I wanted to inform you of both a material and an inspection issue which I strongly encourage the industry to address.

NRC Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs," issued August 9, 2002, informed the industry that the NRC questioned the adequacy of inspection programs for reactor pressure vessel (RPV) head and vessel head penetration nozzles that relied on visual examinations as their only means of inspection. The bulletin provided a supplemental inspection program that the staff would find acceptable and divided the program, based on effective degradation years (EDY), into high, medium and low susceptibility plants. As licensees replace their existing RPV heads with new heads containing Alloy 690 nozzles, these licensees will restart their EDY clock for the RPV heads at zero. At this point licensees will be expected to either follow the inspection guidance outlined in Bulletin 2002-02 associated with a low susceptibility plant or provide a technically defensible alternative inspection plan. Alternative inspection plans for heads with Alloy 690 materials would need to be technically justified using data based on Alloy 690 specimens which are representative of the product forms, section thicknesses and heat treatments of replacement head materials. These specimens should be used to establish the cracking behavior (susceptibility to primary water stress corrosion cracking and crack growth data) of Alloy 690, and associated welding materials, Alloy 52 and 152 in PWR environments. In the absence of an applicable prototypical database, the staff would consider a monitoring and inspection program that could be shown to be effective in detecting any early stages of stress corrosion cracking in Inconel 690. I also suggest that the industry work with the ASME on this issue so that eventually, inspection requirements for Inconel 690 components can be incorporated into the Code.

Another issue that I strongly encourage the industry to address is insuring that sufficient inspection equipment and technicians are available to perform the supplemental non-destructive examinations on the RPV heads and penetrations related to Bulletin 2002-02 responses. Lack of appropriate inspection equipment availability or reliability would not be sufficient justification to forego or delay necessary RVH penetration inspections.

I appreciate your attention to these important issues, and my staff is ready to meet and discuss these issues with you in more detail.

Sincerely,

/RA/

Brian W. Sheron
Associate Director for Project Licensing
& Technical Analysis
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission

cc: Mr. Michael S. Tuckman, Executive Vice President -Nuclear Generation
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Birmingham, AL 35201

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