NUCLEAR ENERGY INSTITUTE

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April 7, 2010

Mr. Eric Leeds
Director, Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Reconsideration of General Design Criterion 4 (GDC-4) Application to Generic Safety Issue (GSI) 191

Project Number: 689

Dear Mr. Leeds:

The NRC and industry efforts to address GSI-191, Pressurized Water Reactor (PWR) Sump Performance, have been ongoing since 1997. These efforts have resulted in major plant modifications that have significantly enhanced safety. We are now focused on potential actions to close out GSI-191. In this vein, we urge the NRC to reconsider the application of GDC-4 as a means to resolve remaining concerns.

GDC-4 of Appendix A to 10 CFR Part 50 allows the use of analyses reviewed and approved by the commission to eliminate from the design basis the dynamic effects of postulated pipe ruptures. This regulation acknowledges the extremely low probability of pipe rupture and the plant capability to detect leakage long before a flaw could grow to an unstable size and lead to a design basis pipe break (i.e., Leak-Before-Break).

The application of Leak-Before-Break to GSI-191 was first proposed by the PWR Owners Group in 1997 and by NEI in 2002. During this timeframe, NRC and industry efforts to resolve GSI-191 were just beginning, and a thorough understanding of the associated phenomena was under development. Long term actions by PWR licensees to address GSI-191 had not yet been determined or acted upon. The NRC review of industry requests to apply GDC-4 reflected this state of knowledge and determined that its use would obviate the need for licensees to make modifications to PWR containment sumps which would otherwise be necessary.

Since that time, our understanding of these phenomena has increased significantly and all operating PWR licensees have modified their plant designs and operations using very conservative methods of

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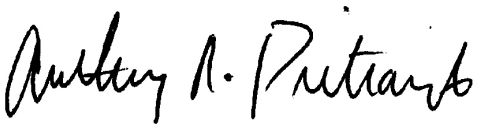
analysis. An examination of the predominant conservatisms employed in GSI-191 analyses is provided in Attachment 1. The prime example of the actions taken by PWR licensees is the expansion of containment sump strainers from a median size of 150 square feet to a median size of over 4000 square feet. Still, the breadth and complexity associated with modeling the processes of debris generation and transport within PWR containments has made GSI-191 a challenge to close deterministically.

At this point in time, given the magnitude and increased safety margin resulting from actions taken and modifications completed by PWR licensees, the risk significance of GSI-191 has been adequately addressed. Further efforts to deterministically resolve GSI-191 for many PWRs would have marginal, if any, safety benefit and would impose a significant burden on licensees in terms of cost and dose. Current NRC options for addressing remaining issues would require wholesale replacement of insulation systems and additional plant-specific testing. These changes will result in significant worker exposure in high radiation areas of PWR containments, with some estimates ranging from 100 person-rem to 600 person-rem. Cost estimates for these changes would also double the amount already spent on the resolution of GSI-191.

We urge the NRC to reconsider the application of GDC-4 as one of the acceptable means for PWR licensees to close out GSI-191. This reconsideration needs to take into account all actions taken thus far by PWR licensees to resolve GSI-191, the risk significance of remaining issues and the adverse impact of current resolution options. Attachment 2 provides a review of previous correspondence on the subject. This review demonstrates that past reasons for rejecting application of GDC-4 to GSI-191 are no longer applicable.

In previous discussions, the staff has indicated that commission direction is needed to act upon the subject request. While we believe the requested action is in accordance with commission policy and direction, we urge you to seek commission guidance on this matter. In closing, we share the NRC desire to fully resolve GSI-191 by the end of the calendar year. Your expeditious attention to this matter is appreciated and will assist our joint efforts. Please contact me at (202) 739-8081, arp@nei.org, or John Butler at (202) 739-8108, jcb@nei.org if you have any questions.

Sincerely,



Anthony R. Pietrangelo

Attachments