NUCLEAR ENERGY INSTITUTE

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September 27, 2010

Mr. William H. Ruland
Director, Division of Safety Support
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Comments on Draft Revision to NRC Safety Evaluation on NEI 04-07

Project Number: 689

Dear Mr. Ruland:

This letter is a response to your July 29 letter that provided a draft of a proposed revision to the NRC staff safety evaluation (SE) on Nuclear Energy Institute (NEI) 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology." In accordance with your request, NEI has reviewed the document and has collected a number of industry comments. The industry comments are provided in the attached table.

Due to the limited time available, our review did not address the technical validity of the proposed changes. Our review has identified a number of concerns regarding the scope and application of the proposed changes to the SE. These concerns highlight our belief that the proposed changes are too selective in their application and are not adequately supported by technical justifications. While your letter notes that staff reviews of debris damage mechanisms and Zone of Influence (ZOI) models have been performed, sufficient detail supporting these reviews is not provided.

The proposed SE revision calls for a selective application of a scaling model to insulations using "Sure Hold" bands. The scaling model is theoretically based and does not appear to be supported by test data. The scaling model is proposed to be applied unidirectionally to increase the ZOI but disallows application in a direction that would decrease the ZOI. The reasoning for such selective application is not provided.

The proposed SE revision justifies the application of the scaling model, in part, based on observations of the failure mode of insulation materials with "Sure Hold" bands (failure of the banding). The staff determined that the scaling model should not be applied to materials with aluminum jacketing since testing performed by Ontario Power Generation demonstrates that such materials fail in a very

different manner (tearing of the aluminum jacketing material). This determination on the failure mode for OPG tests has broader implications since results from a single OPG test with aluminum jacketed fiberglass insulation supported by OPG test results of aluminum jacketed Calcium Silicate was used in the current SE as the basis for a 40% reduction NEI 04-07 destruction pressures and resulted in a 270% increase in ZOI volumes. The failure mechanism for both tests was the tearing of the aluminum jacketing material as opposed to the failure of the bands as observed in the BWROG sponsored air jet tests. The differences in failure mechanisms suggest that the reason for the observed increased damage at the OPG test was due to the failure mechanism not the two phase jet.

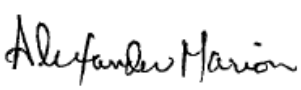
The conservative bias of data and models used in addressing debris generation as well as other aspects of Generic Safety Issue (GSI) 191 has long been noted. It is timely and appropriate that the NRC conduct, with industry participation, a comprehensive and critical review of the existing tests and data used in support of debris generation models. Such a review should be performed in tandem with debris generation testing being performed by the PWROG.

One example of a know conservatism that the proposed reevaluation should consider, is the treatment of seam orientation on insulation jacketing. Currently available test data clearly demonstrate a significant reduction in debris generation if the jacketing seam orientation is not at the limiting orientation (i.e., 45° relative to postulated break). While a 45° orientation is the bounding case, it is not realistic to apply it to all pipes that may be impacted by the jet. Longitudinal seams on horizontal pipes are located only at nominally 0° and 180°. This is in order to prevent dripping liquid from entering the insulation. Since seam orientation has such a large impact on the amount of debris generated, it is recommended that the debris generation methodology be revised to allow a generalized credit for seam orientation.

Given the points raised in this letter and the attached comments, I encourage you to withhold issuance of a revision to the SE at this time. A more supportable basis for SE revision would be available following completion of the critical review proposed above.

We look forward to discussing these points with you during a public meeting to be scheduled in October. If you have any questions, please contact me at 202.739.8080; am@nei.org or John Butler at 202.739.8108; jcb@nei.org

Sincerely,



Alexander Marion

Attachment

c: Document Control Desk, NRC