ACRSR-1857

October 8, 1999

Dr. William D. Travers
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Dr. Travers:

SUBJECT: PROPOSED RESOLUTION OF GENERIC SAFETY ISSUE 23 (GSI-23), "REACTOR COOLANT PUMP SEAL FAILURE"

During the 466th meeting of the Advisory Committee on Reactor Safeguards, September 30-October 2, 1999, we reviewed the NRC staff's proposed resolution of GSI-23, "Reactor Coolant Pump Seal Failure." Our Subcommittee on Thermal-Hydraulic Phenomena also reviewed this matter during its September 15-16, 1999, meeting. During these meetings, we had the benefit of discussions with representatives of the NRC staff, the Westinghouse Owners Group, and of the documents referenced.

Recommendations

- We agree with the staff's proposed approach to the resolution of GSI-23.
- In performing plant-specific evaluations, the staff should assess how relevant uncertainties, in particular those arising from the predictions of reactor coolant pump seal leak rate, affect conclusions about risk significance.
- Despite major improvements in seal materials for Westinghouse pumps, only 75 percent of the plants that have such pumps have installed this new seal material. The staff should evaluate on a plant-specific basis whether installation of improved seal material should be required.
- The staff has chosen to analyze all reactor coolant pump seals using the predictions of flow rates and probability models developed for Westinghouse pumps. We recommend that more realistic analysis of non-Westinghouse pumps be made.

Discussion

GSI-23 was identified in 1980 as a result of a large number of pump seal failures experienced at nuclear power plants during normal operation. Concern arose because the possible leak rates through these failed seals could amount to several hundred gallons per minute (gpm) per pump. The resulting small-break loss-of-coolant accident could lead to core uncovery under some circumstances.

Since 1980 improvements have been made in pump seal materials and the methods for cooling them, and there have been no pump seal failures that have resulted in a leakage of primary coolant exceeding 100 gpm.

The staff has determined that the accident sequences involving pump seal failures are potentially risk-significant for only a handful of plants. Therefore, this matter no longer qualifies as a GSI. The staff plans to resolve GSI-23 on this basis and to conduct plant-specific reviews to determine whether backfits are needed.

The Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research are developing a Task Action Plan to determine the need for plant-specific backfits. We plan to review this Task Action Plan and would like to be informed of future actions by the staff on this issue.

Sincerely,

/s/

Dana A. Powers
Chairman

References:

1. Memorandum (undated) from Ashok C. Thadani, Office of Nuclear Regulatory Research, NRC, to William D. Travers, Executive Director for Operations, NRC, Subject: Closeout of Generic Safety Issue 23, “Reactor Coolant Pump Seal Failure,” received September 20, 1999.
2. U.S. Nuclear Regulatory Commission, NUREG/CR-4294, “Leak Rate Analysis of the Westinghouse Reactor Coolant Pump,” prepared by Energy Technology Engineering Center, dated July 1985.
3. U.S. Nuclear Regulatory Commission, NUREG/CR-5167, “Cost/Benefit Analysis for Generic Issue 23: Reactor Coolant Pump Seal Failure,” prepared by SCIENTECH, Inc., dated April 1991.
4. WCAP-10541, Revision 2, Excerpts from Westinghouse Owners Group Report, “Reactor Coolant Pump Seal Performance Following a Loss of All AC Power,” dated November 1986 (**Proprietary**).