



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

OCT 30 1985

TO ALL LICENSEES WITH BABCOCK AND WILCOX OPERATING REACTORS

Gentlemen:

SUBJECT: RESOLUTION OF GENERIC ISSUE 69: HIGH PRESSURE  
INJECTION/MAKE-UP NOZZLE CRACKING IN BABCOCK AND  
WILCOX PLANTS (Generic Letter 85-20)

On January 24, 1982, an unexplained loss of coolant was detected during normal plant operation at Crystal River Unit 3. After an orderly shutdown, an inspection of the reactor coolant and associated systems revealed that the high pressure injection/makeup (HPI/MU) check valve, valve-to-safe-end weld, safe-end, and thermal sleeve were cracked. Subsequently, inspections were performed at other B&W designed plants. Most of these inspections revealed similar types of cracking in the HPI system of the facilities which indicated that the cracking problem was a generic one. A Safe-End Task Force was formed by the B&W Owners' Group to compile pertinent facts and to make recommendations to solve the cracking problem. The Task Force completed its work in late 1982 and provided its findings and recommendations to the Owners' Group in the "Babcock and Wilcox 177 Fuel Assembly Owners' Group Safe-End Task Force Report on Generic Investigation of HPI/MU Nozzle Component Cracking."

The staff reviewed the Task Force recommendations and agreed that the following actions be taken to resolve this issue:

- (1) Reroll the upstream end of the thermal sleeve when inspections indicate that a gap exists or repair and/or replace damaged components;
- (2) Implement an augmented inservice inspection plan; and
- (3) Perform a detailed stress analysis of a nozzle with a modified thermal sleeve design to justify long term operation.

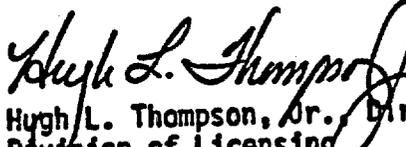
All participants in the Owners' Group Task Force have performed the recommended repairs to damaged components (Recommendation 1) and have voluntarily implemented a satisfactory augmented inservice inspection program (Recommendation 2). Performance of a stress analysis (Recommendation 3) is required to maintain original licensing commitments regarding the stress and fatigue usage allowables required by USAS B31.7 or the ASME code. Analyses for modified nozzles have been performed; analyses for nozzles not requiring modification should have been performed before licensing. Operating experience for some plants has indicated that the expected fatigue analyses could be substantially exceeded by the end of life. For example, an increased number of HPI actuation transients could occur due to manual actuation after reactor trips to avoid losing pressurizer level. Therefore, the staff has determined that it is necessary to ensure that valid stress analyses have been performed.

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Each licensee should verify that a valid stress analysis has been performed for HPI/MU nozzles in accordance with its licensing commitments to meet the Code requirements. Also, each licensee should verify that the cumulative fatigue usage for these nozzles is within the allowables based on a realistic projection of the thermal cycles expected for the life of the plant. The information including stress analysis results and expected number of thermal cycles should be maintained for future inspection.

This generic letter does not impose any new regulatory requirements or any reporting requirements. Therefore, no clearance from the Office of Management and Budget is required. If you have any questions, the staff contact is John Hannon who can be reached at (301) 492-8543.

  
Hugh L. Thompson, Jr., Director  
Division of Licensing