

RAI 5.4-56, Clarification to Supplemental No. 1 sent to GE on 1/4/07, (MFN 06-501, 12/11/06)

This supplemental RAI clarifies the last sentence in the supplemental RAI 5.4-58, ML070100427 sent to GE on January 4, 2007. This clarification specifically addresses the supplemental request for RAI 5.4-56.

Original RAI 5.4-56, RAI Letter No. 77:

“Please confirm that the method/technique for inspecting the IC tubes is capable of detecting general wall thinning, pit-like defects, and stress corrosion cracking along the entire length of the tube (and through the entire tube wall thickness). Please discuss the method/techniques that can be used for inspecting the tubes and the qualification requirements for these methods. Please provide the qualification data supporting the inspection technique (to demonstrate that the tubes are inspectible).”

GE’s RAI 5.4-56 response, MFN 06-501:

“Due their size (NPS 2), the IC tubes are exempt from volumetric and surface inservice examinations by ASME Section XI, IWC-1220 (exempts size NPS 4 and smaller). Requirements for Class 2 inservice inspection (ISI) are addressed in Subsection IWC of ASME Section XI, which is referenced by DCD Section 6.6 for ISI. The eddy current inspection of IC tubing mentioned in Section 5.4.6.4 refers to the Construction Code, ASME Section III, NC-2550, which addresses examination of the tubing material. The isolation condensers are subject to leakage (VT-2) examination under ASME Section XI, IWC-2500, Category C-H, and the system is monitored for radiation leakage as described in Section 5.4.6.2.2.”

RAI 5.4-56 and 5.4-58, Supplemental No. 1:

“Given the lack of operational data and the limitations of accelerated corrosion testing to fully simulate all of the combinations of water chemistry, material properties, and stresses that may exist in the field, provide your proposed inspection and acceptance requirements for these tubes and discuss where these regulatory requirements should be incorporated (e.g., technical specifications, tier 1, ASME Code). In addition, provide a response to NRC RAI 5.4-56.”

Staff’s Clarification on Supplemental Request RAI 5.4-56:

Alloy 600, the material used for the IC tubes, is susceptible to degradation under certain conditions. Visual examination, as proposed by the applicant, will only indicate whether the degradation has penetrated through-wall, which is normally detected through radiation monitoring techniques. The applicant has neither provided long term corrosion tests that address the wide variation that could exist in material properties and water chemistry (given the existing regulatory requirements pertaining to fabrication and water chemistry) nor have they provided any supporting information such as from inspections of current materials that support that the material will not degrade.

The applicant has not adequately demonstrated that the IC tubes are not susceptible to degradation taking into account:

- (1) the range of material and environmental conditions that could exist in the water chemistry and fabrication requirements,
- (2) the lack of long-term service experience (with inspection results), and
- (3) the limitations of accelerated corrosion testing to fully simulate the range of variables that may exist in the field (and pertinent to corrosion).

Thus,

A. Demonstrate that the IC tubes are not susceptible to degradation given the requirements pertaining to water chemistry and fabrication for the IC tubes or demonstrate the IC tubes have sufficient margin to failure (given the potential for degradation to occur).

B. Develop an inspection program that will periodically verify the integrity of the IC tubes or provide adequate justification for why no inspection requirements are needed.