YANKEE ATOMIC ELECTRIC COMPANY

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BYR 90-155

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Attention: Mr. Patrick Sears
Senior Project Manager
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

References:
(a) License No. DPR-3 (Docket No. 50-29)
(b) Letter, NRC to Yankee Atomic Electric Company, dated August 31, 1990
(c) Letter, Yankee Atomic Electric Company to NRC, dated September 28, 1990

Subject: Reactor Pressure Vessel Fluence Assessment

Dear Sir:

As noted in the NRC Safety Assessment of the Yankee reactor pressure vessel (Reference (b)), Yankee committed to preparing and submitting an updated fluence analysis by October 1, 1990. In a telecon with Dr. Thomas Murley, NRC, on September 25, 1990, Mr. John DeVincentis of Yankee Atomic Electric Company (Yankee) reported the preliminary results of the updated fluence analysis and informed Dr. Murley that Yankee would not be able to meet the October 1, 1990 submittal date for the final updated fluence analysis because further work had to be performed in order to verify the preliminary results and assess their effects. In a subsequent telecon between the NRC and Yankee on September 26, 1990, it was agreed that the safety assessment performed by Yankee on the preliminary fluence values would be submitted on September 28, 1990 (Reference (c)) and that the final updated fluence analysis would be submitted within 60 days of the telecon.

Per the 60-day commitment, please find enclosed the results of the final updated fluence (Attachment A) and PTS analyses (Attachment B) for the Yankee reactor pressure vessel.

The fluence distribution and associated mean reference temperatures for the beltline materials have been recalculated and are shown in Tables 1 and 2 of Attachment B. The methodology for determining the reference temperatures is the same as that given in Reference (c).

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The PTS fracture mechanics analysis has also been re-evaluated for the limiting thermal hydraulic parameters from the small break LOCA. The small break LOCA is dominant because it has the highest combination of conditional failure probability and event frequency. The reference temperatures for each material were input into the VISA-II Code as before. The distribution of input parameters, flaw density using the Marshall distribution, flaw length, assumption of one flaw per beltline material, and number of simulations were identical to previous submittals to the NRC. As provided in Table 3 of Attachment B, the results indicate a conditional failure probability of 6.51×10^{-3}. The total vessel failure probability based on the final fluence analysis is 3.25×10^{-6}/reactor-year which is below the NRC criteria of 5×10^{-6}/reactor-year.

Thus, Yankee is still within the bounds of the NRC Safety Assessment and continued operation of the Yankee plant is justified.

If you should have questions concerning the enclosed assessment, please notify me.

Sincerely,

John D. Haseltine

John D. Haseltine
Director
Yankee Project

JDH/gjt/WPP77/216

Attachments

cc: B. Elliot (NRC, NRR)
R. Wessman (NRC, NRR)
W. Russell (NRC, NRR)

Attachment A

Plant Specific Fast Neutron Exposure Evaluations for the First 20 Operating Cycles of the Yankee Rowe Reactor