

June 1, 1984
SBN - 661
T.F. B7.1.2

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

References: (a) Construction Permit CPPR-135 and CPPR-136, Docket
Nos. 50-443 and 50-444

Subject: Response to SER Outstanding Issue #9; Fracture Toughness of
RCPB and Secondary System Materials (5.2.3, 10.3.6)

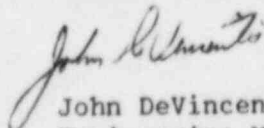
Dear Sir:

In response to the subject SER Outstanding Issue as it relates to the fracture toughness of the main steam and feedwater systems, we have enclosed a revised version of FSAR Section 10.3.6.1.c. This revised FSAR section addresses the issue delineated in Safety Evaluation Report Section 10.3.6, namely, "The applicant should provide a technical rationale justifying the waiving of fracture toughness testing of ferritic steel components of the main steam and feedwater systems."

The enclosed FSAR revision will be included in OL Application Amendment 53.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY


John DeVincentis
Engineering Manager

Enclosure

cc: Atomic Safety and Licensing Board Service List

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Design Criterion 51, and found to be acceptable. (See SER for Containment Boundary).

- c. The main steam and feedwater piping between the steam generators and the containment penetrations is fabricated from ASME SA155, grade KCF70, Class 1, material or ASME SA106, Grade B, seamless material.

The nil ductility temperature from NUREG 0577 Table 4.4 ($T_{NDT} + 1.3\sigma$) is 67°F for the SA106 material and 39°F for the SA155 material.

The Permissible Minimum Service Temperature for these materials is ($T_{NDT} + 30^\circ\text{F}$) from Figure NC-2311(a)-1 of ASME III, or 97°F for SA106B material and 69°F for SA155 material. The minimum service temperature for the main steam lines is restricted to a hydrostatic test temperature of 100°F.

The feedwater piping between the steam generators and the containment penetrations is fabricated from ASME SA106 Grade B, normalized material. The Permissible Minimum Service Temperature for this material is ($T_{NDT} + 30^\circ\text{F}$) from Figure NC-2311(a)-1 of ASME III, or 97°F. The minimum service temperature for the feedwater piping is restricted to a hydrostatic test temperature of 100°F.

Since neither the main steam nor the feedwater lines will be pressurized at temperatures at or below the T_{NDT} , impact testing was not required by the design specification. This is in compliance with NC-2310 of ASME III, Summer, 1972 addenda.

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10.3.6.2 Materials Selection and Fabrication

All Class 2 and 3 pipe, valves and fittings used in the steam and feedwater systems are fabricated from materials that are listed in Appendix I of Section III of the ASME Code.

The following materials are used for Class 2 and 3 service:

Main Steam

SA-106, Grade B and C

SA-155, Grade KCF70

SA-234

SA-105

SA-193, Grade B7

SA-194, Grade 7, 2H, 4 or 3

Feedwater

SA-106, Grade B

SA-234

SA-105

SA-193, Grade B7

SA-194 Grade 7, 2H, 4 or 3

SA-312, Type 304

- c. The main steam system pipe and fittings inside containment were fabricated from the materials listed in Subsection 10.3.6.2 below. All welded joints were examined radiographically to ensure minimum weld defects. Impact testing of this material was not considered necessary, since the maximum nil ductility transition temperature for these materials (conservatively taken from NUREG-0577 as 97°F considering the thickness adjustment) was below the minimum service temperature of 100°F established for the hydrostatic test fluid temperature.

The feedwater system pipe and fittings inside containment and outside containment up to the check valve beyond the isolation valve were fabricated from the materials listed in Section 10.3.6.2 below. All welds were examined radiographically to ensure minimum defects. The piping material, SA-106, was heat-treated to improve impact properties. Impact tests were performed on seven of the eight heats of piping material and met code requirements at the minimum emergency feedwater injection temperature of 50°F.