Department of Energy
Washington, D.C. 20545
Docket No. 50-537
HQ:S:83:240

APR 07 1983

Dr. J. Nelson Grace, Director
CRBR Program Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Grace:

RESPONSE TO SAFETY EVALUATION REPORT (SER) OPEN ITEM NO. 1 - REVIEW OF RDT STANDARDS F9-4T AND F9-5T

As a result of the March 31, 1983, meeting with the Nuclear Regulatory Commission (NRC) staff, the Clinch River Breeder Reactor Plant (CRBRP) project commits to the following actions to close out SER Open Item No. 1, "Review of RDT Standards F9-4T and F9-5T," listed in Section 1.6 of the SER.

The CRBRP project commits to provide appropriate information on the verification of analysis methods and computer programs used in high temperature design at the operating license review stage. The requirement for verification of computer programs has been in place at the CRBRP project since the outset, in accord with the ASME Code requirements and requirements of Section 3.9.1 of the NRC Standard Review Plan. Preliminary information in accord with these requirements has been provided in Appendix A of the Preliminary Safety Analysis Report.

With regard to the use of the alternative temperature limits method of paragraph 6.2 of RDT Standard F9-5T; the project agrees that using this method, instead of the method of Code Case N-47, for the final design of Class 1 elevated temperature components, potentially ignores significant creep strain accumulation. Therefore, the project agrees that the alternative method will not be used in the final stress reports.

Additionally, the NRC staff at the March 31, 1983, meeting stated its intention to impose a confirmatory program on material properties used for inelastic analyses that would be completed by the operating license review stage. The project commits to perform a program outlined in the enclosure to address this concern.

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Any questions regarding the above commitments may be addressed to Mr. D. Robinson (FTS 626-6098) or Mr. D. Edmonds (FTS 626-6157) of the Project Office Oak Ridge staff.

Sincerely,

John R. Longenecker

John R. Longenecker
Acting Director, Office of
Breeder Demonstration Projects
Office of Nuclear Energy

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ENCLOSURE

AGREEMENTS AND COMMITMENTS

FROM CRBRP AND NRC MEETING ON

ELEVATED TEMPERATURE DESIGN

March 31, 1983

For those elevated temperature components containing radioactive sodium where inelastic design analyses are used, the staff required that the applicant evaluate the significance of material property variations. This requires that minimum yield strength and minimum creep strength (80 percent of the average isochronous curves) properties be used to evaluate the fatigue damage,

$$\sum_{j=1}^{p} \left(\frac{n}{N_d}\right)_j$$

creep rupture damage,

$$\sum_{k=1}^{q} \left(\frac{\Delta t}{T_d}\right)_k$$

and the accumulated inelastic strains. These damage fractions for minimum and average material properties shall be presented using the method provided by the ASME Code Case for Class 1 Components in Elevated Temperature Service and reported.

The creep portion of the total accumulated inelastic strains (membrane, bending, peak) shall be presented using the method provided by the ASME Code Case for Class 1 Components in Elevated Temperature service and reported.

Demonstrate the structural adequacy of the components with the above values of damage and inelastic strain.

As a result of the staff review of materials properties variations, the applicant is required to consider minimum and average properties in performing the Confirmatory Programs associated with Findings 1, 5, and 9 in Para. 3.9.9 of the SER.