



Department of Energy  
Washington, D.C. 20545

Docket No. 50-537  
HQ:S:83:228

FEB 28 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:

ADDITIONAL INFORMATION REGARDING PRELIMINARY SAFETY ANALYSIS REPORT (PSAR)  
CHAPTER 4.4

Enclosed is an update to the Clinch River Breeder Reactor Plant PSAR Chapter 4.4, design bases section. As previously discussed with Mr. Tom King of your staff, the enclosed page provides information on primary sodium gas entrainment and assembly flow blockage criteria. This page will be included in the next amendment to the PSAR.

Any questions concerning this submittal can be directed to Mr. K. Peterman (FTS 626-6186) of the Project Office Oak Ridge staff.

Sincerely,

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

Enclosure

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13. The control assemblies flow rate will be such as to assure adequate margin against flotation in case the drive line becomes accidentally disconnected (see Section 4.2.3.1.3).
14. Assemblies orificing will be designed to be consistent with the requirement that the lower shield in the fuel, blanket and control assemblies will have sufficient solid volume fraction to limit radiation damage to the core support structure and to assure its prescribed lifetime.
15. The thermal-hydraulic design of the control assemblies will be such as to satisfy the scram insertion requirements during the reactor lifetime (see Section 4.2.3.1.3).
16. The sodium temperature shall be less than its boiling point during normal operation and anticipated and unlikely transient conditions.
17. The reactor will meet the aforementioned design bases operating over a range of power and flow rates, including power ranges and flow variations, from 0 to 100% of nominal conditions.
18. Adequate design margins (see Section 4.4.3.2) will be provided to account for design, fabrication, operational uncertainties and tolerances to ensure meeting the aforementioned limitations. The semi-statistical hot channel factors approach will be adopted in combining individual fuel, blanket and control assembly uncertainties.
19. As explained in Section 4.4.3.3.1, plant T&H design conditions are considered in performance evaluations of permanent plant components<sup>(+)</sup>, e.g., vessel, Internals, heat exchangers. Therefore, these conditions shall be considered in evaluation of Items 7 through 10, 16 through 18. On the other hand, plant expected operating conditions are adopted in steady state performance and design evaluations of replaceable components such as the reactor assemblies. Therefore, plant expected operating conditions shall be considered in evaluation of Items 1 through 6, 11 through 15, 17 and 18.
20. The design shall prevent gas entrainment sufficient to cause significant heat transfer or reactivity changes in the core.
21. The design shall provide features to minimize the potential for flow blockage of incore assemblies.