UNITED STATES
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Files (Docket No. 50-155)
THRU: D. L. Ziemann, Chief, ORB #2, DRL
D. L. Ziemann

PROPOSED CHANGE 28: (1) MODIFIED FUEL AND SUPPORT TUBE ASSEMBLY AND (2) CLARIFICATION OF STACK RELEASE RATE LIMITS (CONSUMERS POWER COMPANY)

By letter of January 21, 1972, Consumers Power Company requested changes in the Technical Specifications for Big Rock Point to (1) permit the use of both original design and redesigned fuel channel and support tube assemblies and (2) clarify the stack release rate limits. In telephone conversations with R. Sewell of Consumers on February 11 and 15, and R. Sewell and E. Murray on February 23, we obtained additional clarification and verification of our understanding of the proposed changes.

The modified fuel channel and support tube assemblies have been designed to improve coolant flow at the entrance region of the fuel bundle without altering the total core flow pattern when both original and redesigned assemblies are used in the core. Consumers has had hydrodynamic tests performed which demonstrated that the modified assemblies fulfill the objectives of the redesign. In addition, Consumers states that it was experimentally demonstrated that flow effects in the fuel bundle entrance region of the original design assemblies do not cause any thermal hydraulic operating limits to be exceeded.

At our request, Consumers evaluated the blowdown forces to verify that the forces in the new assembly during a loss-of-coolant accident do not differ from the original assembly. The forces are a function of the loss coefficient which in turn is a function of Reynolds number. The Reynolds number for both channels (new and original design) is above 10^5, and in a region where the loss coefficient as a function of Reynolds number is a constant. Therefore, there will be no noticeable change in loss coefficients with respect to the two channels.

Consumers and we considered also the effect of raising the fuel bundle 3/8 inch as compared with the elevation in the original assembly. The bundle is raised because the transition piece between the support tube and channel was lengthened to provide a smaller transition angle between the two pieces. One effect considered was flux peaking at the upper edge caused by having a fuel bundle surrounded by bundles with fuel at a lower elevation. Both Consumers, H. Richings of DRS, and we concluded that any flux peaking from this change would be negligible since there is no change in the percentage of water in the upper region of the surrounding assemblies. (Note also that the peak normalized flux in a channel is 1.5 compared with 0.8 at the core exit as determined by flux wires.)