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MAR 21 1979

Mr. A.E. Scherer
Licensing Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Dear Mr. Scherer:

Subject: Evaluation of Combustion Engineering Flow Blockage Model

References: 1. NRC Letter from D.F. Ross to A.E. Scherer, dated March 22, 1978.

2. CE Letter from A.E. Scherer to D.F. Ross, Jr., LD-78-069, dated September 18, 1978.

The Combustion Engineering flow-blockage model incorporated in your ECCS evaluation model has been under review by the staff. You were informed in Reference 1 of our conclusion that the predictions of LOCA-induced cladding strain and resultant assembly flow blockage were, in general, nonconservative. In addition, you were requested to provide us with the technical justification for your conclusion that the present CE ECCS evaluation model continues to be acceptable or can be acceptably modified to take into account the staff's concerns. Your response to this request was provided in Reference 2 and contained an evaluation which demonstrated that the current model is conservative with respect to a revised model. This model incorporated a revised rupture-strain model and an improved steam cooling heat transfer model. You concluded that the CE flow blockage model continues to be acceptable for the safety analyses performed for all CE reactors.

We have reviewed the information you presented in Reference 2 and have some additional questions about the heat transfer and flow redistribution aspects of the revised model described in Reference 2.

1. With respect to Figure 3-13, what is the range of Reynolds numbers for System 80 plants?

2. Provide a comparison of the new and old model for 60% blockage as was done for 20% blockage in Figure 3-12.

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3. In the revised calculation, how far down stream of the rupture does the peak cladding temperature and peak local oxidation occur (see page 3-16 of Reference 2)?

4. Provide a sample calculation for Kij as used in Appendix A, Reference 2.

5. Provide in more detail the solution methodology for HCROSS as described in Appendix A.

We have communicated these questions verbally to Mr. Longo and received some informal answers. However, it is important to receive documentation of all the answers. In the near future we will be communicating further with you about the rupture-strain part of the model. If yourhave any questions please contact Mr. Paul Norian of the Analysis Branch. He may be reached on (301) 492-7911.

Sincerely,

Original signed by
Thomas M. Novak for

Robert L. Tedesco, Assistant Director
for Reactor Safety
Division of Systems Safety
Office of Nuclear Reactor Regulation

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