NRC PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 0 8 1979

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

Dear Mr. Scherer:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION

In order to complete our review of topical report CENPD-177-P, "CEDNBR - A Computer Code for Transient Thermal Margin Analysis of a Reactor Core," we find we need additional information. The additional information required is identified in the Enclosure. Within seven days after receipt of this letter, please inform us of your schedule for submitting the complete response.

Sincerely,

Robert L. Baer

Robert L. Baer, Chief
Light Water Reactors Branch No. 2
Division of Project Management

Enclosure:
Request for Additional
Information

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ENCLOSURE

REQUEST FOR ADDITIONAL INFORMATION

1. The following Errata have been identified in the subject topical report. Please correct or clarify.
   (a) (Page A-4, third line). Equation 2-5 should be Equation 2-6.
   (b) (Page A-4). Equation A-10 should include RHOA+ (i,j) term.
   (c) (Page A-5, Statement 4). HTPAL(j) should be HTAPL(j).
   (d) (Page A-6). The channel 3 and 4 power density equations are not numbered. HTABL(j) should be HTAPL(j).
   (e) (Page B-7, Line 4). There is no B-4 in the References for Appendix B. What is the correct reference?
2. Discuss the applicability of mixing factors derived from a core-wide steady state code calculation to transient calculations using a two channel code. Show the sensitivity of CEDNBR to the mixing factor inputs.
3. Discuss the code design provisions to insure that all conditions during the course of a calculated transient remain within the ranges of the empirical correlations.
4. Equation 6-1 expresses $\Delta P_{err,i}$ as the difference between measured and predicted pressure drop in the test section. However, Figure 6-1 appears to show predicted pressure drops higher than those measured, which would result in a negative mean pressure loss error as tabulated in Table 6-1. Clarify this interpretation of the discussed statistical analysis.

5. Discuss your calculations and justify the selection of time increments to obtain the time-dependent input values for the peaking factors.
6. (Page 2-9). Describe a typical application where a second hot subchannel (Channel 4) would be used in your CEDNBR model.
7. In the subroutine MIX (Pages C-21, C-22 and C-23), the derivation of the expression for the mixing factor FMIX for the case when YMIXO = -1.0 is not evident. Describe the development of this expression and the relation to the similar expression for YMIXO = +1.0.
8. (Page 4-1). The procedure for selecting input data includes the assumption that the fuel assembly containing the hot channel experiences the same total axial pressure loss as the core average. Discuss any sensitivity studies performed to justify this assumption.
9. What is the maximum error inherent in the assumptions on pages 4-1 and 4-2: "(4) the time dependent normalized axial heat flux profile in the fuel assembly containing the hot subchannel is the same as that for the hot subchannel itself, and (5) the time dependence of the normalized heat flux, inlet temperature and system pressure are the same in the hot subchannel as in the fuel assembly containing the hot subchannel."?
10. (Page 4-4). Discuss the basis for not considering the hypothetical hot subchannel to be adjacent to an instrument thimble (guide tube).
11. (Page B-3). The installation of a stainless steel washer in place of the ceramic washer creates the possibility of producing a deformation in the heater tube in the form of a hump at the CHF location. Discuss the effect of this possibility on the thermocouple measurement.