



July 2, 1985
LD-85-031

Mr. George W. Knighton
Chief, Licensing Branch 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Combustion Engineering Large Break LOCA
Evaluation Model

Dear Mr. Knighton:

The purpose of this letter is to confirm a telephone conversation between C. M. Molnar and C. L. Kling of Combustion Engineering (C-E) and Brian Sheron of the Nuclear Regulatory Commission Staff, this date. The conversation was in regard to an ongoing review of a potential non-conservatism in one element of the currently approved C-E Evaluation Model used for demonstrating compliance to 10 CFR 50.46, Acceptance Criteria for Emergency Core Cooling Systems of Light Water Nuclear Power Reactors. As discussed with Dr. Sheron, C-E expects the effect of this potential non-conservatism to be small. The influence on peak clad temperature, however, could be greater than the 20°F criteria of 10 CFR 50.46, therefore, C-E is notifying the Staff of this matter. All utilities for which C-E has performed the large break LOCA evaluation are believed to be subject to this discrepancy. Although the potential exists for a failure to comply with the acceptance criteria of 10 CFR 50.46, C-E has, to date, not identified this as a significant safety concern.

The potential non-conservatism was identified in our review of the axial power distribution used in C-E's Evaluation Model. We re-examined the power shape during the performance of sensitivity studies on a

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revised C-E LOCA Evaluation Model to extend its applicability to other vendor's plants. (The specific parameters in question are axial power distribution and peaking factor.) The proposed Evaluation Model revision and subject sensitivity study, showed that, for another vendor's plant, a center peaked chopped cosine axial power distribution and flatter axial peaking factor are more adverse than that currently used for C-E plants. Preliminary results, however, indicate that analyses for C-E plants are less sensitive to changes in these parameters. The change from a top peak to the center peak along with a change to a flatter axial peaking factor is, nevertheless, expected to increase the peak clad temperature for C-E plants.

While our evaluation is not yet complete, C-E does not now believe that this issue poses a significant safety concern since predictions of peak clad temperature performed consistent with NRC proposed changes to 10 CFR 50.46 Appendix K would be expected to be well below the current 2200°F acceptance criteria limit used for demonstrating compliance for licensing evaluations. Furthermore, other proposed changes to C-E's Evaluation Model, which will be submitted shortly for Staff review, should provide compensatory improvements which we expect will minimize or eliminate the influence of the subject potential non-conservatism. In addition, most utilities for which C-E has performed the LOCA evaluations are limited by departure from nucleate boiling considerations. As such, existing trip setpoints would result in a plant shutdown prior to approaching the peak linear heat generation rate which was employed in the LOCA analyses.

Combustion Engineering has been taking the necessary steps to notify our utility customers of this concern. In addition, we have arranged to meet with the appropriate NRC Staff members to discuss this matter in more detail in a meeting tentatively scheduled for the week of July 8, 1985.

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If you have any questions on this matter, please do not hesitate to call me or Mr. C. M. Molnar of my staff at (203) 285-5205.

Very truly yours,

COMBUSTION ENGINEERING, INC.



A. E. Scherer
Director
Nuclear Licensing

AES:bks

cc: S. T. Brewer (C-E)
E. J. Butcher, Jr. (NRC)
B. W. Sheron (NRC)
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