D880510

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: PROPOSED REVISION OF THE ECCS RULE CONTAINED IN 10 CFR 50.46 AND APPENDIX K

During the 337th meeting of the Advisory Committee on Reactor Safeguards, May 5-7, 1988, we met with members of the NRC Staff and reviewed the final version of the proposed revision to the emergency core cooling system (ECCS) rule contained in 10 CFR 50.46 and Appendix K. Our Subcommittee on Thermal Hydraulic Phenomena met on April 20, 1988 to discuss this matter. We also had the benefit of discussions with the NRC Staff and of the documents referenced. The ACRS previously commented on the proposal to issue this rule for public comment in a letter dated September 16, 1986.

The proposed revision to the ECCS rule will eliminate the requirement to use the models specified in Appendix K and allow use of realistic models combined with an uncertainty analysis of the overall calculation. Certain criteria in 10 CFR 50.46, such as 2200~F peak cladding temperature and 17% cladding oxidation, would be maintained. The regulatory guide which will accompany the revised rule describes features of a realistic evaluation model acceptable to the NRC Staff and contains guidance on performing the necessary associated uncertainty evaluation.

No changes have been proposed to the final rule version as a result of the public comments received. The regulatory guide has been modified somewhat to clarify the NRC Staff's intent in certain areas.

The ACRS has long advocated use of best estimate or realistic evaluations for safety analysis. We believe the proposed rule is a major step forward in this effort, and we support its adoption. We wish to note the following points:

- Work to demonstrate the Code Scaling, Applicability, and Uncertainty (CSAU) method for the peak cladding temperature calculated to occur in the reflood phase of a large break LOCA has not been completed. This will be needed to establish guidelines for Staff review of future licensee submittals under the new rule. While the CSAU method has been reasonably demonstrated for the so-called blowdown peak, application to the reflood demonstration will be more difficult. We do not object to plans to proceed with promulgation of the rule change, but we would like to be kept informed about the development of and allowance for uncertainty in the reflood peak temperature.

- We note that the draft Federal Register notice provided to support the rule change has eliminated reference to any claimed safety

advantages for the rule. We believe the safety advantages are substantial.

Additional comments by ACRS Member Harold W. Lewis are presented below.

Sincerely,

W. Kerr
Chairman

Additional Comments by ACRS Member Harold W. Lewis

I have no quarrel with the Committee's letter, but want to seize the opportunity to reinforce a point that has been made before. It is stimulated by unsatisfactory answers to questions at the presentation to the Committee.

The CSAU "methodology" purports to be a systematic procedure for estimating the uncertainty in code calculations. That is a laudable objective, and its achievement would be even more laudable. It would be helpful if, in so doing, there were less confusion between the concepts of uncertainty and a probability distribution, and less misuse of the term "confidence limits." These objectives will not be reached unless some professional statisticians become involved. In this case, it is of more than usual importance, since the uncertainty is directly related to the acceptable level of conservatism which must be added to the realistic calculations.

References:

1. U.S. Nuclear Regulatory Commission, Draft SECY paper for the Commissioners from V. Stello, EDO, "Revision to the ECCS Rule Contained in Appendix K and Section 50.46 of 10 CFR Part 50," provided to the ACRS, April 20, 1988.
2. U.S. Nuclear Regulatory Commission, Draft NUREG-1230, "Compendium of ECCS Research for Realistic LOCA Analysis," Office of Nuclear Regulatory Research, dated April 1987.

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