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September 8, 1982
SE-LEH-685
NS-EPR-2656

Mr. Harold R. Denton, Director
Office Of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Dear Mr. Denton:

I understand that the Nuclear Regulatory Commission is considering revisions to the current Appendix K licensing rule for light water reactor accident analysis. Westinghouse has provided comments on such a proposal through different NRC staff members over the last year and would like to summarize our view on Appendix K revisions.

We believe that the past decade of light water research and analysis has indicated that much of the conservatism which was put into the Appendix K rule to cover uncertainties can be identified and quantified. This additional conservatism is now available as margin which we feel the industry and staff should be able to utilize. The method we would propose to factor identified margin into the licensing process would be to make a procedural change in Section 50.46 (a) (1) of the rule to authorize the regulatory staff to accept the use of new research data in approving Appendix K evaluation models. The staff would then be in the position of allowing new experimental information from the LWR research programs to be factored into the licensing process. Using the notice and comment approach in the Federal Register should eliminate the need for an open adjudicatory rule-making hearing. Westinghouse opposes an adjudicatory hearing because industry resources are taxed to the point that support of hearings would require the delay of other efforts such as post-TMI actions relating to development of emergency procedures and small break codes.

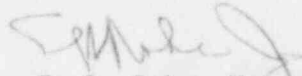
We have summarized our position on Appendix K changes in an American Nuclear Society abstract which will be presented at the Winter Annual meeting in November. A copy of the abstract is attached.

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We believe the procedural change we have suggested, which will allow inclusion of new research information into licensing, will result in increased peaking factor margin such that the industry will be able to focus on more realistic problem areas related to safety. I would be interested in any comments you might have on our suggestion for Appendix K changes.

Very truly yours,



E. P. Rahe, Manager
Nuclear Safety Department

EPR/bbp

cc: Dr. R. Mattson - US NRC
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APPENDIX K - A SIMPLE CHANGE

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ANS Winter Annual Meeting
Washington, D. C., November 1982

APPENDIX K - A SIMPLE CHANGE

BACKGROUND

At the conclusion of the 1972 ECCS hearings, acceptance criteria for Emergency Core Cooling Systems were established in 10CFR50.46. Limits were placed on the calculated peak clad temperature, maximum cladding oxidation, and maximum hydrogen generation. Coolable geometry and long-term cooling limits were also specified. The rules in 10CFR50 Appendix K prescribed several models and initial assumptions which would maximize the consequences of a calculated loss of coolant accident (LOCA).

Some of the benefits of the Appendix K rule were that it brought some stability to the licensing process, once NSSS vendors had their safety analysis model approved by the NRC staff. The Appendix K rule focused industry and the NRC attention on what appeared to be the most limiting accident thereby reducing attention given to more probable accidents including those which require operator action.

The Westinghouse approach was to live within the Appendix K prescriptions and concentrate its resources on developing margin through improved models and analysis efforts permitted by Appendix K with complementary experimental programs for verification. A new safety system, upper head injection, was developed and placed on specific plants which lacked Appendix K margin. The system had some features, such as quenching of the fuel during blowdown that demonstrated the restrictiveness of the Appendix K limits. The NRC Research Division took the same approach but with the goal of assessing the true margin between best estimate plant behavior and the prescribed Appendix K rule.

CURRENT STATUS

Since 1974 Westinghouse has observed an overall trend of LOCA margin erosion, despite our best efforts to develop improved models for LOCA analysis in the non-prescriptive areas of Appendix K. Further, most of the "easy" benefits in the nonprescription portions of Appendix K have been utilized and the cost to obtain additional benefits is becoming prohibitive, particularly in today's environment of no new NSSS orders.

At the same time, we observed that almost a decade of concentrated safety research has clearly shown that many prescriptive portions of Appendix K are overly conservative. Also, recent "best estimate" LOCA calculations indicate that there is approximately 1000°F margin to the Appendix K peak clad temperature limit of 2200°F.

Other countries are currently integrating the research performed in the United States into their nuclear power licensing processes. An example of this is that Japan is allowing in ECCS Evaluation Models the use of the 1979 ANS decay heat standard and the Oak Ridge Metal Water Reaction Rate Model, both developed since the ECCS hearing.

RECOMMENDED CHANGES

Westinghouse believes the industry is faced with the following dilemma:

- (a) Our analysis methods have limited margin to counteract any new NRC concerns or accommodate advanced fuel management schemes and new fuel designs.
- (b) A large amount of existing experimental data cannot be used directly in the licensing process to justify plant operating margin.

- (c) Industry resources are taxed to the point that support of an adjudicatory hearing of the scope of the 1972 core cooling hearings would require the delay of other efforts such as post TMI actions, procedures, and small break modeling which impact the safety of operating plants.

To resolve this dilemma, Westinghouse recommends a simple procedural changes in Section 50.46 (a) (1) to authorize the regulatory staff to accept the use of new research data in approving Appendix K evaluation models. Westinghouse supports a public notice and comment process that results in modifications to the rule, while avoiding the costly, time consuming public hearing process. The Administrative Procedure Act, Section 554 (a) (3), exempts commission decisions based on tests from adjudication, and recent Supreme Court rulings support rulemaking by notice and comment. In this way, extensive LOCA research information could be utilized without the need for an adjudicatory rulemaking hearing.

Westinghouse believes that the proposed approach has the following advantages:

- (a) Eliminates the need for a complicated two-part rulemaking process, as was proposed by the NRC in 1978, and which has a high probability of leading to a prolonged adjudicatory rulemaking.
- (b) Provides flexibility for the NRC staff to incorporate new experimental data and models into Appendix K.
- (c) Places the burden on vendor/applicant to demonstrate the adequacy of the model and that sufficient conservatism still exists.
- (d) Allows use of analysis methods that have more physical realism, and which should give the NRC staff more confidence in the results.
- (e) Avoids the need for a costly and lengthy adjudicatory hearing.

- (f) Eliminates criticism related to inability to incorporate new results of safety research in the licensing process, especially where research results provide margin by verification of significant conservatism in the rule.
- (g) Provides incentive to vendors to continue to develop understanding of reactor transients.

Since acceptance criteria and evaluation models have already been modified as necessary to account for new information with potential for adverse effects on ECCS performance, the resulting changes should not result in the imposition of additional requirements, either hardware or analytical, on plants currently operating under construction.

BENEFITS

Additional LOCA margin would enable utilities to take advantage of a number of options that are precluded by the present restricted situation. Requirements for costly surveillance techniques could be reduced or eliminated. Longer fuel cycles would be easier to attain, which would reduce the number of refueling outages and increase availability. Load follow capability would be increased.

Low leakage loading patterns that reduce neutron leakage would be more feasible. This technique decreases fuel cycle costs and also helps mitigate the potential for pressurized thermal shock.

Westinghouse believes that if the proposed changes were adopted, sufficient large break LOCA margin would exist to permit more flexible full power operation of PWR's. This could free up large numbers of resources currently devoted to developing LOCA margin and performing plant re-analyses for more productive work in more important safety areas as well as improvement in reliability and availability.