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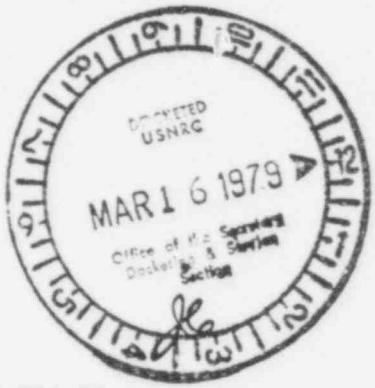

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 10555

Attention: Docketing and Service Branch

Gentlemen:

SUBJECT: ADVANCE NOTICE OF PROPOSED RULEMAKING CHANGES TO EXISTING EMERGENCY CORE COOLING SYSTEM RULE

Reference:
1) Glenn G. Sherwood letter to Marcus A. Rowden, April 1, 1977, "Interpretation of 10CFR § 50.46 and Appendix K"

2) NRC Advance Notice of Proposed Rulemaking Change to Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Plants

In early 1977 General Electric's experiences with LOCA analysis defined a need for ECCS rule making changes. GE commented on the NRC Staff's overly conservative interpretation of 10CFR § 50.46 and Appendix K in Reference 1 which addressed the need to improve the climate by reducing the restrictions presently affecting Appendix K licensing actions.

As a result of GE's action and subsequent industry action, the U. S. Nuclear Regulatory Commission is considering amending its regulations to change certain technical as well as nontechnical requirements within the existing emergency core cooling system rule and has requested interested persons to submit advice and recommendations on several questions concerning the present ECCS rule. This letter addresses the NRC request.

General Electric believes the proposed changes in the Appendix K rules are not only appropriate, but highly desirable and further endorses changes to the appropriate technical and non-technical requirements within the existing rule. GE also believes experience gained in the licensing process, new research information and plant operating experience should be factored into the ECCS rule. However, GE is extremely concerned about the potential for excessive and time consuming non-essential testimony in reopening public hearings. Their scope should be limited and clearly defined, and the process should directly result in improvements to the health and safety of the public.

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Meanwhile, there is an immediate need for increased flexibility by the Staff in its interpretation of the requirements of Appendix K. Immediate emphasis should be placed on a timely implementation of model improvements within the existing rule. GE submitted model improvements over six months ago and results of the review are still forthcoming.

The present rule does not require a best estimate model, and neither should the new rule. However, General Electric favors the objective of using best estimate models with appropriate safety factors and therefore has allocated resources to programs to obtain best estimate models. This work toward the best estimate model objective is a more appropriate effort than expending technical resources in a lengthy hearing process.

For example, the NRC has stated that the new ANS decay heat standard which has already absorbed extensive industry and NRC resources and has been approved by both the NRC staff experts and industry will require both a Phase 2 assessment and several years to implement. GE believes that it is counterproductive to assess the new ANS decay heat curve in Phase 2. Based on the already proven technical justification supporting the new ANS decay heat standard, it should definitely be part of the Phase 1 assessment.

GE comments concerning the five questions raised specifically in Reference 2 follow:

1. Under what circumstances should corrections to ECCS models be used during licensing review without necessitating complete reanalysis of a given plant or an entire group of plants?

General Electric's position is clearly stated in Reference 1. In summary, based on 10CFR § 50.35(a)(2) the staff should be allowed to make technical judgements concerning ECCS model refinements which can permit the continuation of construction permit activities; however, reanalyses consistent with approved models are to be required before operating licenses are issued. With regard to operating licenses, it would appear that recalculations are not required if the technical staff does not believe that model changes involved will result in a calculated peak-clad temperature in excess of 2200°F.

GE does not believe a rule can adequately anticipate the nature of any technical refinements and their relation to specific plants. Therefore the "rule" should be modified to allow the NRC staff to evaluate technical refinements and determine the level of analytical detail which is required.

2. What would be the impact of the proposed procedure-oriented and certain specific technical rule changes?

The impact of the proposed procedure-oriented changes are discussed in Reference 1. Some of the procedure-oriented rule changes would be beneficial; however, relative to operating plants, GE believes that recalculations should not be required if "no change in technical specification is involved" rather than if temperature decrease and no change in technical specification is involved (phase 1, para 1b).

The specific technical changes would have no immediate impact, but the "Return to Nucleate Boiling" would allow for more realistic predictions, in combination with other model changes.

3. How should safety margins be quantified and how can acceptable safety margins best be specified?

Safety margins should be included in the criteria limit (e.g., 2200°F) and not in the models (e.g., decay heat). Safety margins should be specified through a factor or factors assigned to the best available estimate predictions of the controlling LOCA phenomena. The safety factor should be a value that can be modified to reflect changes associated with research results and model improvements. The rules should not reference specific methods or correlations because flexibility is needed to address new research information and operating experience. The rules should indicate the parameters to be controlled (e.g., peak clad temperature) and the acceptable limits (e.g., 2200°F) for LOCA safety analyses. It should be the responsibility of the vendor to demonstrate that the appropriate phenomena are considered and defend the associated uncertainty levels.

4. What phenomena have been identified since promulgation of the ECCS rule that are significant to ECCS performance and that are not adequately considered in the existing ECCS rule, in light of current knowledge and experience, or in current licensing practices?

GE is not aware of any phenomena which have not been adequately considered in the existing ECCS rule. The following have been identified as areas where current knowledge and experience have resulted in improved understanding since the ECCS rule was issued. These areas should be examined for revision to current licensing practices.

- Critical Flow Rate
- Decay Heat

- Metal-Water Reaction
- Return to Nucleate Boiling (Rewet)
- Counter Current Flow
- Post Dryout Heat Transfer (transition boiling and low flow film boiling)
- Core Spray Distribution
- Reflood Heat Transfer

The NRC staff should be responsible for determining which phenomena could significantly affect ECCS performance. The rule should not treat the specific phenomena except to establish how the NRC staff will determine which are relevant.

5. How should the ECCS rule provide for the inclusion of new research information and operating experience? Can or should this be done on a continuing basis? How should revision of acceptable margins be handled in such a process?

Somehow a process needs to be developed that is technical within judicially established boundaries. The process should include technical recommendations from the vendor, technical review and sign off by the staff. In agreement with recent Presidential suggestions, it shouldn't require a new law or massive federal action to recognize and incorporate advances in technology. These advances should be continually considered by the NRC technical staff. GE believes that the rule should be modified to allow the NRC technical staff to make judgements which today they cannot make. Currently, for instance, the NRC legal staff has concluded that Appendix K requires the use of the 1971 proposed version of the ANS standard notwithstanding the fact that the NRC technical staff has approved and supported the 1978 version of the ANS standard.

As indicated above, the rules and method for specifying safety margins should allow flexibility to introduce new research results and operating results on a continuing basis. New information should be evaluated from a balanced perspective (not just selecting the potentially negative impacts and ignoring the clearly positive results). In addition, new information which has been thoroughly evaluated should be considered valid unless there is sufficient technical justification to reject it. This flexibility can be best achieved if the rules are procedure and criteria oriented, and do not reference specific methods or correlations.

In summary, GE believes that extensive favorable new research information has been generated through vendor and NRC funded programs since the ECCS Rulemaking Hearings. Yet this information has had little or no direct

effect on the licensing process. The 1977 NRC Annual Report states one of the goals of the NRC Nuclear Regulatory Research program is to provide information for use in the licensing process. GE believes the NRC technical staff should determine what phenomena are to be included; and that they should not be unduly constrained from recognizing and implementing technical refinements. We will follow this issue with great interest and are prepared to discuss these matters with you further as your position evolves.

Very truly yours,

R Gridley

Glenn G. Sherwood, Manager
Safety and Licensing Operation

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cc: Larry S. Gifford