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July 27, 1982

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: PRESSURIZED THERMAL SHOCK (PTS)

Dear Mr. Denton:

As a follow-up to our June 23, 1982 letter to you, the AIF Reactor Vessel Integrity Subcommittee has given further consideration to the development and implementation of regulatory requirements related to pressurized thermal shock (PTS). The purpose of this letter is to request that you consider the additional information presented below in the further development of the NRC plan for resolving the PTS issue.

We believe that any regulatory approach to the PTS issue should be flexible. Therefore, it is suggested that the overall plan being developed by the staff to address this issue involve a two phase process. Phase I would involve the establishment and use of an interim regulatory position and the detailed definition of a final regulatory position. Phase II would involve the implementation of the final regulatory position. This approach would benefit both the NRC and the industry. The advantages of such a two phase approach are:

1. It provides a near-term mechanism for determining which plants need the greatest PTS emphasis and allows plant-specific evaluations to be undertaken, refined or completed.
2. It recognizes that additional ongoing and planned work being done over the next 18 months will have an impact on the final regulatory position and therefore provides an incentive to complete that work.
3. It allows time to develop carefully a practical and cost-effective final regulatory position which assures plant safety.

We believe that the details of such a phased approach can be worked out in a timely manner and should involve industry input. In general we propose a regulatory framework which contains seven basic elements as follows:

Regulatory Framework

<u>Element</u>	<u>Responsibility</u>	<u>Phase/Comments</u>
1. Define screening criterion	NRC/Industry	I
2. Perform screening assessment	Industry/Individual Plants	I
3. Refine guidelines for performing plant specific evaluations	NRC/Industry	I
4. Perform plant-specific evaluations	Industry/Individual Plant	I - Where possible, complete X years prior to exceeding screening criterion
5. Develop mitigation options	NRC/Industry	I
6. Perform plant-specific mitigation studies and establish schedule for any required mitigating action(s).	Industry/Plant	II - Where possible, complete Y years prior to exceeding plant specific EPFY limits.
7. Implement plant-specific mitigating action(s)	Industry/Plant	II - Implemented by the time the plant would fail to meet the plant specific EPFY limits.

Phase I could be designated as an interim phase and would consist of elements 1 through 5. It is believed appropriate and practical to have phase I extend through the end of 1983, at which time the screening criterion would be defined, the regulatory position would be finalized, the mitigating options developed, the screening of plants would be complete, and the plant-specific evaluations would be complete, as appropriate. Phase II, consisting of steps 6 and 7, would involve selection and implementation of the mitigation actions.

The following is a further description of the basic elements in the proposed regulatory framework.

Element 1, as defined by the regulatory framework, would incorporate the efforts to date by both the NRC and industry to develop an acceptable screening criterion. It would seem appropriate to incorporate into the final regulatory position the stipulation that the screening criterion be reviewed periodically and revised appropriately.

Element 2 involves performing a simple screening assessment. While we believe that  $RT_{NPT}$  values can be used for screening purposes in the interim phase, care must still be taken to ensure that the results of such a screening action are not misinterpreted, particularly if the criterion is very conservative. Because of this conservatism, it is important to avoid implying a near-term safety concern if the criterion is not met. On the other hand, meeting the conservative criterion does demonstrate sufficient margin for unencumbered plant operation. Actual margin can only be defined with a plant-specific evaluation.

Element 3 involves the development of guidelines for performing plant-specific evaluations. Much of the PTS work already performed by the industry involves plant-specific evaluations. Therefore, the guidelines for such an evaluation could be developed cooperatively in a relatively short period of time.

Element 4 involves performing plant-specific evaluations on those plants that do not meet the screening criterion. The timing for completing the plant-specific evaluations should be related to the timing when it is predicted that the simple screening criterion will no longer be satisfied. For example, if one plant is predicted to exceed the simple screening criterion in 5 years and another in 15 years, they should not be required to complete plant-specific evaluations within the same time frame. The plant-specific evaluations in Element 4 would involve deterministic and probabilistic analyses. These guidelines should recognize that there is threshold below which low probability, severe, events need not be considered.

Element 5 would involve developing the various mitigation options. It would be important in developing the final regulatory position to agree on the bases for determining the expected mitigating benefits of each of the proposed actions. Consideration also should be given to varying acceptance criteria by which progressively more costly actions are justified.

Element 6 would involve performing studies to determine which mitigating actions are the most cost-effective and reaching agreement with the NRC staff on plant-specific implementation schedules.

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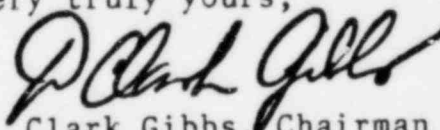
Element 7 would involve actual implementation of the mitigating actions. The final regulatory position should be such that at any time prior to implementation, new information could be provided which might make it inappropriate to implement the mitigating action; e.g., additional operating experience data, new research results, the development of new NDE techniques and results, etc.

The regulatory framework should be flexible so that, as a licensee prerogative, certain mitigative actions could be implemented to assure compliance with the screening criterion for the remainder of plant life, and thereby minimize or eliminate the need to perform detailed plant specific evaluations.

The regulatory framework could be further developed in the near term. We propose that this be done with cooperation between the NRC and industry. Members of the Owners Groups working with the AIF Subcommittee on Reactor Vessel Integrity would be pleased to work with the staff to develop more fully such a framework.

In summary we believe the use of RT<sub>NDT</sub> as a simple screening criterion as proposed by NRC can form the foundation for a regulatory position. The industry and NRC should continue to work together to refine the screening criterion and develop the possible mitigation options. For those plants, if any, that do not meet the criterion, a plant specific evaluation should be made to assess the margin of safety. We believe it would be efficient from a resource utilization standpoint and would be practical and justified from a safety standpoint to proceed with a phased approach to regulatory action as described in this letter. We would be pleased to meet with the staff to discuss the overall approach suggested above in more detail.

Very truly yours,



D. Clark Gibbs, Chairman  
Committee on Reactor Licensing  
and Safety

DCG/hlt  
Enclosure

cc: W. Dircks