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SUBJECT: Forwards response to NRC request for review of draft NUREG-0667, made during 800423 meeting w/B&W plant licensees.

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400 Chestnut Street Tower II

May 19, 1980

Director of Nuclear Reactor Regulation
Attention: Mr. O. D. Parr, Chief
Light Water Reactors Branch No. 3
Division of Project Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Parr:

In the Matter of the Application of	)	Docket Nos. 50-438
Tennessee Valley Authority	)	50-439

Enclosed is our response to a request made by the NRC during the April 23, 1980, meeting with Babcock and Wilcox (B&W) operating plant licensees. The latter was asked to write a letter to the NRC stating their major concerns on the 22 recommendations proposed in "Transient Response of Babcock & Wilcox-Designed Reactors," draft NUREG-0667. These comments would be taken into account along with NUREG-0667 and other input in developing the final recommendations. Even though TVA's Bellefonte Nuclear Plant is not an operating plant, we would like to offer several comments for your consideration. We hope that our comments will provide useful input for your consideration of the OTSG sensitivity matter.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

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cc: Mr. James McFarland (Enclosure)
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ENCLOSURE

COMMENTS ON IMPLEMENTATION OF RECOMMENDATIONS BY THE
B&W REACTOR TRANSIENT RESPONSE TASK FORCE (NUREG-0667)

1. General Approach

We recommend that an orderly approach be used for proposed design changes to (1) make sure that they are beneficial and (2) make sure that they do not have an adverse safety impact. We recommend that all proposed design changes be evaluated against the (1) acceptance criteria discussed in recommendation 19, (2) sensitivity studies in recommendation 10, and (3) consideration of operating experience. The establishment of acceptance criteria for anticipated transients needs to be a joint effort of NRC and industry. The cautions in section 5.2.3.3(2), pages 27 and 28, of NUREG-0667 must be considered in application of the acceptance criteria.

The benefit of some proposed design changes are readily apparent (e.g. NNI/ICS power supply improvements) and require little evaluation to decide to implement. Other proposed design changes should not be implemented until the significant aspects have been sufficiently evaluated. For the latter, we recommend that an evaluation program be established by utilities with (1) a practical schedule, (2) reporting results, and (3) a commitment to implement clearly beneficial design changes.

The following illustrates the need for a sufficient evaluation of some of the proposed design changes. We are concerned that some of the proposed design changes in the automatic control and protection systems may result in "electronic patches" which could be (1) very difficult to implement, (2) decrease overall reliability of the plant protection system, and (3) provide adverse responses for events other than the specific event for which the "patch" was intended to mitigate. (An example is discussed in comment 2 below.) The following needs to be considered before any complex control systems are added:

(a) An evaluation to determine if additional and/or more detailed analysis would demonstrate that the existing design is adequate.

(b) The actual need and basis for the proposed design change.

(c) The practicality of upgrading a system or component to "passively" cope with the transient without exceeding design limits instead of providing additional "active" controls to mitigate or prevent the transient.

2. AFW Overfill Protection and Improved Flow Control - Recommendation 2

We believe that AFW system needs to have safety grade automatic steam generator level control to (1) limit overcooling and (2) prevent overfilling. However, we believe that redundancy is not needed within individual AFW trains if (1) the steam lines can withstand the dynamic forces, and (2) adequate consideration is given to the potential loss of the turbine-driven AFW pumps from overfill of the steam generators.

We have serious reservations as to the practicality of an AFW overfill protection system that is required to have redundancy within individual AFW trains. The conflicting requirements of (1) single failure proof initiation of AFW to a good steam generator (current BLN design) with (2) single failure proof isolation to a failed steam generator (current BLN design) combined with (3) single failure proof isolation to prevent AFW overfill (potential new criteria) may lead to a logic, actuation and power configuration which is so complex that it (1) might not be achievable with a practical system and (2) could decrease the overall reliability of the AFW system.

We have had a great deal of difficulty with the four channel actuation and its associated separation requirements needed to deal with the two existing single failure requirements. The addition of another degree of complexity would be extremely difficult to achieve (e.g. six or eight channels might be required). These same considerations would also apply if AFW flow control is required to be single failure proof.

3. Dual PORV Block Valves and Closure by ESFAS - Recommendation 17(c)

An automatic ESFAS closure of the PORV block valve may not be desirable for all events which initiate the ESFAS. It may be possible to take

credit for operator action to isolate the PORV due to the slow moving nature of those transients which require PORV isolation.

The single failure considerations and the need for automatic closure of the PORV block valve are still controversial subjects and need further evaluation as noted in recommendation 17. The proposal in recommendation 17(c) involves the use of dual PORV block valves that can provide single failure proof automatic isolation after a PORV failure. This goes beyond the current single failure criteria. In contrast, other viewpoints suggest that the PORV relief path be single failure proof to relieve water for (1) a feed and bleed mode of cooling (e.g., section 5.2.5) and (2) a means of providing low temperature over pressure protection for the Reactor Coolant System (RCS).

4. Safety-Related Display Instruments - Recommendation 6

We agree that there is a definite need for a set of safety-related display or accident monitoring instruments. However, the list of parameters selected is not consistent with the other related efforts underway, such as RG 1.97, RG 1.139, etc. We recommend that these related efforts be coordinated so that they will be consistent with each other.

5. Consideration of Steam Line Breaks - Sections 5.2.2 and 7

The effects of large steam line breaks are much less severe on the primary side of plants with OSTG's than they are for plants with U-tube steam generators. The difference in performance was large enough that the early OTSG plants did not initially have protection systems to cope with steam line breaks; whereas, they were provided for some U-tube steam generator plants of that vintage. This area where the OTSG offers a substantial benefit should be reflected in sections 5.2.2 and 7 to present a balanced perspective of the transient response of the two basic types of steam generator designs.