

D931110

The Honorable Ivan Selin  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Chairman Selin:

SUBJECT: DRAFT COMMISSION PAPER, "POLICY AND TECHNICAL ISSUES  
ASSOCIATED WITH THE REGULATORY TREATMENT OF NON-SAFETY  
SYSTEMS IN PASSIVE PLANT DESIGNS"

During the 403rd meeting of the Advisory Committee on Reactor Safeguards, November 4-6, 1993, we reviewed the NRC staff's positions and recommendations in the subject draft Commission paper, which reflects changes resulting from public comments on an earlier draft. We reviewed this earlier draft during our 400th meeting, August 5-6, 1993. Also, our Subcommittee on Improved Light Water Reactors reviewed this matter during a meeting on August 4, 1993. During this review, we had the benefit of discussions with representatives of the NRC staff and EPRI. We also had the benefit of the documents referenced.

The basic issue under review is that passive plant designs rely on passive safety systems to meet the regulatory requirements, but also include active non-safety systems as a first line of defense to reduce challenges to the passive safety systems in the event of transients or plant upsets. As this represents a departure from the current licensing approach, the draft Commission paper is intended to develop regulatory and review guidance for the AP600 and SBWR certification submittals.

In the draft Commission paper, the staff identified eight issues that pertain to the regulatory treatment of non-safety systems (RTNSS) for passive LWRs. We are in general agreement with the staff's positions and recommendations for resolving these issues, but have the following specific comments on three particular issues.

A. Regulatory Treatment of Non-Safety Systems

This specific issue has the same name as the general subject because it addresses an overall process for resolving the various issues. The overall process proposed by the staff would make innovative use of PRA to determine the risk significance of active non-safety systems with respect to meeting the ancillary safety goal on core-melt frequency, and a large release goal not fully defined. Reliability/availability "missions" for the active non-safety systems would be developed and regulatory oversight procedures applied that would depend on the assessed risk significance.

In general, we think the proposed RTNSS process is a bold and positive step in the direction of risk-based regulation. We recommend that the Commission approve this general process,

and we encourage the staff to proceed with further development, to address some of our specific concerns, and to begin the implementation of the process. Our specific concerns are as follows:

1. The staff is still proposing the use of a "large release" frequency of  $1 \times 10^{-6}$ /yr as a "safety goal guideline." Since a different segment of the staff previously recommended abandoning this concept (we think for good reason), it is disturbing to see it being resurrected here. We believe the RTNSS process would be better served by use of a conditional containment failure guideline.
2. We believe that the risk significance of the active systems (as developed from the baseline and focused PRA) will be sensitive to the reliability values assumed in the PRAs for the passive systems. We are concerned that there does not exist a sufficient data base to establish appropriate reliability values for use in the proposed process.
3. We were told that the reliability/availability "missions" for the risk-significant active non-safety systems will, in fact, be reliability values. The proposed process is vague about how the review and regulatory audit processes can determine whether or not such reliability "missions" will have been met in the design and maintained during operation. We believe that the proposed review and audit processes, reliability assurance program, and implementation of the Maintenance Rule will not provide assurance that such "missions" have been met.
4. The document calls for generating uncertainty distributions for the PRA results. Since the only numerical goals mentioned were based on mean values, it is not clear to us how the uncertainties are to be used by the staff.

#### B. Definition of Passive Failure

The draft Commission paper identifies certain passive failures that could initiate accidents. Included are check valve failures, medium- or high-energy pipe failures, and valve stem or bonnet failures. We note that valve stem or bonnet failures are included as initiating failures for the passive plants. To the best of our knowledge, the staff does not postulate such failures as current licensing practice for evolutionary plants. If such a failure were postulated to occur in the outboard containment isolation valve for the reactor water cleanup system of the Advanced Boiling Water Reactor, and the postulated single active component failure results in a failure to close the inboard containment isolation valve, the final result would be an unisolated loss-of-coolant accident outside of the primary containment.

Concerning check valves, we support the staff position to

redefine check valves (except for those whose proper function can be demonstrated and documented) in the passive safety systems as active components subject to the single failure consideration.

C. Reliability Assurance Program  
(Issue E in the draft Commission Paper)

We are in substantial agreement with the staff proposal on the reliability assurance program (RAP). It is noted that this program represents a significant commitment of resources by the ALWR vendor and, even more, the COL applicant. The use of modern risk assessment methods in identifying the systems, structures, and components to be covered within this program, and hence the use of these resources, is an important feature of the staff approach. We continue to recommend that the RAP be integrated with implementation of the Maintenance Rule.

Sincerely,

J. Ernest Wilkins, Jr.  
Chairman

References:

1. Draft Commission Paper (Undated), from James M. Taylor, NRC Executive Director for Operations, for The Commissioners, Subject: Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs, received July 21, 1993
2. Revised Draft Commission Paper (Undated), Subject: Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs, received November 4, 1993