D900118

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: RESOLUTION OF THE INTERFACING SYSTEMS LOCA ISSUE

During the 357th meeting of the Advisory Committee on Reactor Safeguards, January 11-12, 1990, we discussed the subject topic with members of the NRC staff. This issue was also discussed during our 356th meeting, December 14-15, 1989. Our Subcommittee on Thermal Hydraulic Phenomena considered this issue during its meeting on December 7, 1989.

The interfacing systems loss of coolant accident (ISLOCA) has been identified by the NRC staff as a problem of sufficient risk potential that a special program for its resolution is warranted. Such an event creates the potential for loss of two of the three barriers to fission product release, and if it occurs, is likely to lead to early fission product release outside of containment. Although earlier studies, including those reported in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," indicate that such an event has a low probability, the staff members who have undertaken the special program do not believe the previous studies have accurately represented human error contributions to the likelihood that such an event occurs.

The NRC ISLOCA program includes evaluation of available PRA analyses of accident sequences that may lead to such an event. Special emphasis is to be given to the human reliability contribution to initiation of such a sequence, and to ways in which its consequences may be mitigated. Engineering analysis of the low pressure piping systems will be carried out to determine where leaks or breaks could occur. A program of selected PWR plant audits is also under way. The results of these studies will be of value to the IPE effort in general, as well as to the ISLOCA issue, and the studies are encouraged. Special attention should be given to the environmental effects and flow-induced mechanical impact on equipment in the vicinity of the leak if the results are to be meaningful. Efforts should be made to ensure that the study results are broad enough to be applicable to BWRs. Our concern lies in how the results of these studies will be used.

Information provided by the staff leads us to conclude that causes of and optimal mitigation strategies for ISLOCA events are likely to be highly plant specific. In addition, important ISLOCA sequences apparently involve complex human actions that are not well modeled even in state-of-the-art PRAs. While the plant-specific nature of ISLOCA would seem to make it a logical candidate for the IPE process, the staff expressed concern that the PRAs that are likely to be used by licensees in performing their IPEs will

not adequately deal with ISLOCA. Three approaches to resolving this issue were discussed:

(1) Information developed by the staff in its ISLOCA program could be used to modify PRAs used in IPEs so that ISLOCA is adequately analyzed. This is probably not practical and could undesirably delay completion of IPE programs.

(2) Information developed by the staff in its ISLOCA program could be used to develop a resolution and set of licensee requirements entirely separate from the IPE program. We believe this would tend to unnecessarily burden licensees with demands on their engineering and other resources and interfere with efforts to efficiently manage their IPE programs. We would not favor this option unless the staff program indicates ISLOCA might be an unexpectedly high contributor to plant risk.

(3) Information developed by the staff in its ISLOCA program might be furnished to licensees for incorporation into their IPE programs without the expectation that it would be comprehensively included in PRAs. We believe that PRAs should be regarded only as one, albeit important, tool and source of information to be used by licensees in their IPE programs. As a general premise, information from the ISLOCA program, resolution of GSIs and USIs, and many other sources can and should be used in IPEs, whether or not formally included in PRAs.

We recommend option number three as making the most efficient and effective use of staff and licensee resources.

Sincerely,

Carlyle Michelson
Chairman