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The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Chairman Zech:

SUBJECT: ACRS COMMENTS ON THE PROPOSED RESOLUTION FOR GENERIC ISSUE 124, "AUXILIARY FEEDWATER SYSTEM RELIABILITY"

During the 330th meeting of the Advisory Committee on Reactor Safeguards, October 8-10, 1987, we completed discussion of the status of a resolution for Generic Issue 124 (GI-124) concerning the reliability of auxiliary feedwater (AFW) systems in seven particular plants. The Committee previously met with representatives of the NRC Office of Nuclear Reactor Regulation (NRR) and the Office of Nuclear Regulatory Research during our 329th meeting, September 10-12, 1987. This matter was also discussed during a meeting of the Decay Heat Removal Systems Subcommittee on August 5, 1987. We reviewed the beginning of this work about a year ago and commented in a letter dated September 17, 1986 to the Executive Director for Operations. We also had the benefit of the documents referenced.

GI-124 addresses concerns about the adequacy of AFW systems in a particular set of seven older PWR plants. These plants had been singled out for generic attention in a screening study of AFW system reliability several years ago. It was believed that this group of plants deserved special attention in advance of the more general review of the reliability of decay heat removal (which includes the issue of AFW reliability) in all plants being evaluated in the Unresolved Safety Issue A-45 (USI A-45) program.

Each of the seven plants has a two-train AFW system estimated, at the time of the screening, to have an unreliability greater than 10 per demand. Other "two-train" plants, which had estimated unreliabilities less than 10 per demand were not included in the group of seven plants.

Our 1986 letter was critical of the proposed program plan because it failed to identify objective criteria by which reliability or effectiveness of AFW systems were to be judged. The NRC Staff responded by asking that we wait until the initial plant reviews were available and then reconsider whether we agreed with their approach to resolution as put into practice.

We have now reviewed the initial plant evaluations and our objection to the process remains. As we understand the resolution process, it is to consist of seven plant-specific evaluations and negotiated settlement packages, rather than a general solution. Each evaluation starts with an inspection and review of the design and operation of a plant's AFW system by an NRR team. The inspection and review identifies "negative features" in design, operation, or maintenance and calls these to the attention of the licensee. It is then, apparently, the intent to correct or otherwise resolve these negative features to the mutual satisfaction of the licensee and NRR.

Our objection to this approach has two main points:

(1) The quantitative criterion (unreliability greater than 10-4 per demand) by which the seven plants were originally singled out as requiring special attention has been rejected by the NRC Staff as too "crude" to be used in measuring the adequacy of proposed AFW improvements. This calls into question the original selection process. It becomes unclear whether there really is a generic issue regarding AFW reliability in a certain subset of plants and, if there is, why these particular seven plants are in the subset of concern.

(2) The NRC Staff has not specified an objective standard by which it intends to judge whether possible improvements to the AFW systems in these plants are adequate. Instead, NRC Staff teams will review each AFW system in detail, react to what they find, and negotiate improvements with the licensees. We believe this approach represents a serious misallocation of responsibility and resources between regulators and the regulated industry. It is a mistake that should be corrected in this instance and in other regulatory activities as necessary.

We will expand on each of these two points below.

If the screening analysis used to identify this subset of seven plants as having a unique problem is now considered to be seriously flawed, then we believe the whole basis for GI-124 is invalid. It may be most appropriate to drop this issue and to concentrate Staff resources on the resolution of USI A-45.

If GI-124 is to be continued, the conditions important to AFW reliability should be considered more explicitly in the resolution. From a risk perspective, the minimum acceptable AFW reliability is related to the expected challenge or demand frequency on the system. For example, if the main feedwater (MFW) system in a plant is capable of maintaining stable flow to the steam generators for an extended period following a reactor and turbine trip, then the reliability requirement on AFW might be lower than otherwise deemed acceptable for a plant without this capability. Of course, if trips of the MFW system itself are a main cause of demand for AFW, this advantage might be unimportant. As another condition, if there is a strong capability for primary bleed and feed heat removal in a plant, again the reliability requirement on AFW might be lower than otherwise considered acceptable.

It appears to us that the plant reviews conducted so far have been done competently by experienced and capable review teams. Negative features identified have been real and practical issues, but often of rather minor individual significance. Some more significant design or operational problems have also been identified. If all or most of the individual issues are corrected or improved, there is little doubt that AFW reliability will be somewhat improved at each of the plants. This is a subjective judgment on our part because NRR has furnished no quantitative estimates of the incremental risk associated with each negative observation -- nor with their sum.

Our objection to this approach for resolution of GI-124 is not that the process itself entirely lacks merit, but that it is inappropriate for NRC to resolve a generic safety issue in this manner. Inspection and review of the sort described to us should be carried out in-house by the utility-licensee

or by an industry organization. The NRC should better use its own resources by providing the licensees with some objective definition of the AFW reliability it believes is necessary.

For example, if an unreliability for AFW greater than 10-4 per demand is judged by the NRC to be inconsistent with its overall intent in regulating nuclear power, then the resolution of GI-124 could require a good faith effort on the part of licensees to estimate the unreliability of the system in each plant. This would be followed by licensee-initiated improvement of the AFW system sufficient to meet that requirement. If the NRC believes analytical methods are not well enough developed to specify this sort of quantitative limit on unreliability, then it might instead want to specify a deterministic requirement, e.g., that two-train AFW systems are acceptable only if they incorporate certain favorable attributes or a diverse system for decay heat removal. But, the NRC must then have the resolve to define these necessary attributes in an understandable way and not resort to a reactive ("bring me a rock") style of regulation.

We recognize that the development of an appropriate objective criterion for AFW reliability is, or may be, a difficult task. However, diversion of the engineering resources of NRR to work that is more properly carried out by industry, such as the aforementioned inspection and review teams, only delays addressing the difficulty and may preclude development of a truly generic resolution that is both sound and has long-term utility.

Sincerely,

William Kerr
Chairman

References:

1. U.S. Nuclear Regulatory Commission, "Safety Evaluation by the Office of Nuclear Reactor Regulation, Auxiliary Feedwater System Reliability (Generic Issue 124) With Respect to Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2," transmitted by letter from George Lear, Division of PWR Licensing-A, Office of Nuclear Reactor Regulation, to Dave M. Musolf, Northern States Power, dated November 26, 1986.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation of the Auxiliary Feedwater System (Generic Issue 124) With Respect to Arkansas Nuclear One Generating Plant Unit 2," transmitted by memorandum from Eric S. Beckjord, Office of Nuclear Regulatory Research, to Thomas E. Murley, Office of Nuclear Reactor Regulation, dated July 13, 1987.

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