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

Dear Chairman Zech:

SUBJECT: ACRS COMMENTS ON RADIOACTIVE WASTE MANAGEMENT RESEARCH AND OTHER  
ACTIVITIES

During the 331st meeting of the Advisory Committee on Reactor Safeguards, November 5-7, 1987, we discussed several high-level (HLW) and low-level (LLW) radioactive waste management research activities. We had previously discussed these activities with the NRC Staff during our 329th meeting, September 10-12, 1987. These matters were also discussed during meetings of the Waste Management Subcommittee on August 17-19, 1987 and October 15-16, 1987, and during the Subcommittee's field trip to the University of Arizona on July 28, 1987.

The recent changes in organization of the waste management activities of the NRC have provided opportunities for the proper focusing of attention, both by the NRC Staff and the ACRS, on the LLW and the HLW programs. On the basis of our review of these activities, however, we have noted several potential problems that need to be addressed. In this regard, we offer the following comments.

One of our more important observations is that there is a need for the NRC Staff to better define the scientific bases for some of the requirements specified in various Technical Positions and the connection between these requirements and the NRC regulations they are designed to support. In some cases, these requirements appear to have been introduced only for the convenience of Agreement States or the operators of shallow land burial facilities. We believe that this practice should be carefully examined to determine whether it establishes an undesirable precedent and whether such needs by the States could be accommodated by a method other than the exercise of regulatory power.

An example of this problem is the Technical Position on Low-Level Waste Form. This document demonstrates a need by the NRC Staff to define more clearly the connection between the requirements for testing the waste form and the regulations governing its performance. We recommend that the Division of Low-Level Waste Management and Decommissioning (DLLWMD) Staff reexamine the fundamental bases that led to the formulation of the Technical Position and its requirements, and ensure that the test and performance requirements are pertinent to the conditions likely to be found in shallow land burial facilities. For example, leach testing is now being required of the LLW form. The NRC Staff, however, was not able to demonstrate an explicit connection between this requirement and regulatory criteria. The Staff should be directed either to define such a connection or to delete this requirement. Further, they should document and make readily available the analyses that form the bases of performance evaluation and acceptance

of the waste form.

The continued aging of U.S. nuclear power plants makes it likely that the volumes of LLW from decontamination and decommissioning activities will increase. We believe that the complexity of the chemistry of such wastes requires that the DLLWMD Staff formulate very clearly the associated problems and the proper approaches for solving them. As a part of this process, the Staff should seek the support of consultants and/or members of the Office of Nuclear Regulatory Research (RES) contractor staffs.

We reviewed several RES programs dealing with the integrity of the HLW repository. While the results of the NRC research may need to be used in an adjudicatory hearing involving the Department of Energy, our review revealed that the NRC data were obtained under a quality assurance (QA) program considerably weaker than that imposed by NRC on DOE. We believe that the Division of High-Level Waste Management should actively review the NRC research programs and their output, and implement such disciplined QA activities as are needed to provide data with credibility comparable to those of DOE.

Finally, the review of the RES programs revealed that only a very modest level of peer review had been employed. Further, we note that the request for proposal for the Federally Funded Research and Development Center (now called the Center for Nuclear Waste Regulatory Analyses) appeared to discourage the contractor from publishing his results in refereed journals, thereby disallowing the usual form of peer review. In addition to encouraging journal publication, we believe that the Staff should implement a careful, focused, and visible peer evaluation of both the quality of the research results and their applicability to regulatory requirements. Such evaluations should be initiated for each program to the extent feasible, should be periodic, and should be designed to provide clear objectives for the management of the research program.

Sincerely,

William Kerr  
Chairman

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