



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

January 29, 1991

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Chairman Carr:

SUBJECT: PRIORITY ISSUES ON RADIOACTIVE WASTE MANAGEMENT

In response to your memorandum of December 10, 1990, members of the Advisory Committee on Nuclear Waste (ACNW) have identified several technical issues that we believe deserve priority attention. These issues, which are summarized below, are based on discussions by the Committee during its 26th (December 12-13, 1990) and 27th (January 23-25, 1991) meetings. Serving as input to our response were discussions that individual ACNW members had with the NRC staff.

1. Standards and Criteria for a High-Level Radioactive Waste Repository

Items within this subject area that the Committee believes deserve special attention include: (a) continued interaction with the NRC and the U.S. Environmental Protection Agency (EPA) staffs on revisions in the EPA standards, with emphasis on the treatment of uncertainties; (b) ongoing interactions with the NRC staff on the development of related guidance documents, including technical positions, staff positions, and regulatory guides; and (c) reviews and interactions related to the clarification of issues such as subsystem requirements, systematic regulatory analysis, and related rulemaking activities which include definition of a specific dose criterion for design basis accidents involving a high-level radioactive waste (HLW) repository.

2. Site Characterization

Characterization of the proposed HLW repository site at Yucca Mountain is in a critical period during which the NRC must provide overview of the U.S. Department of Energy (DOE) program with guidance and reviews that relate to the site characterization process and the ultimate licensability of the

site. The Committee believes that it can provide significant advice to the Commission on these items, particularly as they relate to the assessment of potentially adverse conditions such as volcanism, seismicity, changes in groundwater flow and climate, and the impacts of coupled processes. Additionally, the Committee will advise the Commission on important topics currently under consideration such as exploratory shaft facility alternatives, surface-based testing priorities, and plans for testing the Calico Hills formation.

3. Performance Assessments

A key factor in evaluating a waste disposal facility is the ability to predict its performance. The capability to perform such assessments in the case of an HLW repository requires supporting data, validated models, and the identification and quantification of potentially adverse conditions. A specific goal of the Committee will be to confirm that the guidance being provided to DOE is adequate to ensure that sufficient information is obtained relative to various natural phenomena that can significantly influence the long-term performance of an HLW repository. A key example is the potential impact of seismicity and volcanism on groundwater travel time and the integrity of waste canisters.

In this same regard, we plan also to address the performance assessment capabilities available for evaluating various types of low-level waste disposal facilities. Although some guidance and a regulatory base exist for evaluating shallow land burial facilities, few if any of the new facilities being proposed will be of this type. The Agreement States, in particular, need assistance in developing capabilities for assessing bunkered types of disposal facilities, and the urgency for such assistance is emphasized by the deadlines mandated by the Low-Level Radioactive Waste Policy Amendments Act. Included in these considerations is the need for improved capabilities for assessing the magnitudes of the source terms for certain long-lived radionuclides, such as iodine-129 and carbon-14. Records show that data on the quantities of these radionuclides that have been disposed in existing facilities are inaccurate.

4. Other Items

The primary focus of the Committee is on licensing a high-level waste repository, however, the Commission and the NRC staff have asked for Committee advice on important issues dealing with low-level waste. Issues included here include the regulation of mixed wastes, "Below Regulatory Concern," and the decommissioning of nuclear power plants.

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Recognizing that the above listings are broad in scope, we have summarized below those issues that we believe deserve priority attention over the short term:

1. critique of the revisions in the EPA standards;
2. review of NRC guidance to DOE for characterization of the proposed Yucca Mountain site; and
3. evaluation of the performance assessment capabilities for newer types of low-level radioactive waste disposal facilities.

We plan to address these subjects both through regular meetings of the Committee and through working group sessions. Experience has shown that ACNW working group sessions provide an excellent forum for identifying and illuminating issues that are of critical importance relative to upcoming decisions.

Most of the activities outlined above will be conducted on an iterative basis. As a result, it is anticipated that specific objectives and goals will be modified as the work progresses. We plan to keep you informed.

We trust this is responsive to your request, and we look forward to your comments on these plans and suggestions.

Sincerely,



Dade W. Moeller
Chairman

