



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

ACNWR-0121

PDR

November 20, 1996

The Honorable Shirley Ann Jackson
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: 1997 PRIORITY ISSUES FOR THE ADVISORY COMMITTEE ON
NUCLEAR WASTE

CRITERIA FOR PRIORITIZATION

The Advisory Committee on Nuclear Waste (ACNW) has adopted and implemented criteria for assigning priorities to issues it will consider. Priorities are assigned and updated annually on the basis of the criteria presented below. Of course, priorities are subject to change at any time on the basis of the needs of the Commission and developing events.

The overarching criterion for assigning priorities to issues is the protection of the public, workers, and the environment from any adverse effects of the management of nuclear waste, especially in regard to disposal facilities.

Other criteria applied in the prioritization process are listed below:

- **NRC's strategic plan, including trends and directions in regulatory practice, such as the adoption of a risk-informed, performance-based method of regulation and decision-making**

This criterion for establishing priorities includes the consideration of the Commission's own thinking and judgment concerning nuclear waste issues. In particular, it includes a clear understanding of the Commission's view of what the priorities are. However, the ACNW does not restrict the issues to only those of immediate concern to the Commission.

- **The strategy and activities of licensees and applicants**

Special emphasis should be placed on the Department of Energy's (DOE's) licensing strategy and activities, including the program plan, the site characterization

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program, and the performance assessment for the proposed Yucca Mountain repository. The idea is that priorities are dependent not only on the regulatory process but also on the intentions of the licensee and applicant.

- **The scientific and technical basis of information supporting the safety and performance assessments of nuclear waste disposal facilities, including the quality and level of technical expertise involved**

The importance of an issue is clearly dependent on the quality of the supporting information, such as basic data, and the analyses performed.

- **The timeliness of the advice provided by the ACNW with respect to effective decision-making in the regulatory process**

The licensing process involves the systematic and incremental development of information. Timely regulatory decision-making depends strongly on an effective match of information development and regulatory involvement.

The application of these criteria has resulted in the following priority issues, not listed in order of importance. It should be pointed out that not all of these issues will be considered. In the final analysis, current events will determine the course of our reviews.

PRIORITY ISSUES

1. Regulatory Framework

The ACNW will continue to focus on the framework for high-level waste disposal. Environmental Protection Agency (EPA) standards (40 CFR Part 197) and NRC's conforming regulations are scheduled for development. The ACNW will monitor the interaction between the EPA staff and the NRC staff as they consider these standards and regulations. In 1997 DOE will provide for agency and public comment, their HLW siting regulation (10 CFR Part 960). The ACNW will review and comment on the DOE document. Subissues under this topic are the following: regulatory time of compliance, consideration of the critical group and reference biosphere, and whether consideration should be given to risk discounting as an element of a standard. We will consider the defense-in-depth philosophy, the use of subsystem requirements, and the treatment of uncertainty.

2. Waste Isolation Strategy

The ACNW will monitor and comment on DOE's final Waste Isolation Strategy and the NRC staff's response to this document, once these become available. The Waste Isolation Strategy document is expected toward the end of 1996 from the DOE. This issue will focus on the source term and will consider container design. As part of this review, we will examine the NRC staff's Key Technical Issues (KTI) effort and its interface with the DOE's Waste Isolation Strategy.

3. Viability Assessment and Site Characterization

The DOE is scheduled to complete the viability assessment (VA) of the Yucca Mountain repository site in 1998. The principal objective of the VA is to address the major unresolved technical questions and the technical and economic feasibility of constructing and operating a geologic repository at the Yucca Mountain site. The ACNW will review DOE's conclusions and the NRC staff's review of the VA. The ACNW will also be able to determine if the KTI process (the basis of the staff's review effort) will produce sound regulatory decisions. The ACNW will provide advice to the Commission and guidance to the staff on site characterization and analysis activities related to DOE's studies and NRC's KTIs.

4. Repository Design

The ACNW will continue to focus its attention on the repository design, including thermal loading issues. Additional details of the design will be developed as part of the viability assessment determination, but will not be finalized. The ACNW has unresolved concerns on coupled thermal-hydrological-mechanical-chemical processes and will continue to evaluate progress in this area. Other design elements that could affect the overall behavior of the repository, due to their effects on overall system chemistry, are concrete tunnel liners and iron from steel sets and fuel canisters. The ACNW will evaluate the adequacy of models that have been developed to predict repository behavior. Issues such as retrievability and canister design would be considered under this topic. The ACNW will examine the proposed location of the repository within Yucca Mountain and the impact that the repository "foot print" will have on the facility design.

5. Low-Level Radioactive Waste (LLW) Disposal

In December 1995, the ACNW commented on SECY-95-201 in which the NRC staff listed three options for NRC's LLW program (eliminate, reduce, or keep the status quo). In July 1996,

the ACNW produced a report titled "Elements of an Adequate LLW Program," which suggested that, as a minimum, the current program be retained. Our advice is consistent with the Commission's preliminary preferred option in Direction Setting Issue Paper 5. Agreement State programs and the progress of compacts and individual States in developing new disposal facilities remain an issue with ACNW. We remain concerned about the final disposal strategy for mixed wastes and will continue to monitor developments. The ACNW will continue its review of an NRC staff Branch Technical Position on Low-Level Waste (LLW) Performance Assessment and the related time of regulatory compliance associated with LLW disposal.

6. Decommissioning

The ACNW continues to have a strong interest in waste disposal issues related to decommissioning. In the past, the ACNW has advised the Commission on streamlining the Site Decommissioning Management Plan (SDMP) and on the lessons learned from decommissioning the Pathfinder power plant. The ACNW anticipates commenting further on the use of performance assessment in determining priorities for cleanup in SDMP sites. We have several concerns in this area, including residual levels of contamination, mixed waste, greater-than-Class C waste, and consistency of screening criteria and methodology.

7. Expert Judgment in Regulatory Decision Making

The ACNW issued a report in August 1996 on the NRC's Branch Technical Position (BTP) on Expert Elicitation in the High-Level Radioactive Waste Program. In its advice on the BTP, the ACNW identified four areas of concern: (1) the selection of subject matter experts and participation of the experts in refining the problem definition, (2) aggregation of the results, (3) interpretation of the results, and (4) application of expert elicitation. The ACNW will continue to monitor the application of the BTP to specific expert elicitations being conducted by DOE and on the generic applications of the BTP guidance.

8. Risk-Informed and Performance-Based Regulation

The ACNW expects to support an effort designed to help move the agency from deterministic regulations toward risk-informed and performance-based regulation. The goal is to link adequate assurance of safety more closely with the regulations. Our effort will consider practices in other nations that are implementing risk-informed and performance-based regulations. Efforts toward risk harmonization with the EPA will be considered.

9. Performance Assessment (PA)

The ACNW will continue to monitor DOE's total system performance assessment (TSPA) and review the staff's Iterative Performance Assessment Program including NRC's audit review of TSPA. We will continue to consider whether PA is being used to its full advantage in prioritizing issues. The ACNW will investigate the treatment of uncertainty in the use of bounding analyses. Uncertainty analyses are important in determining the adequacy of site characterization and abstracting geologic information for PA models. The ACNW will continue to monitor progress in these areas, and will comment on the advisability of the NRC staff producing a separate guidance document on the treatment of uncertainty.

10. Uranium Mill Tailings

The ACNW will review NRC regulations pertaining to uranium mill tailings. Considerations will include a determination of the risk and practical remediation methods such as the stabilization of tailings piles and groundwater protection monitoring in the vicinity of the tailings pile, as well as radon emissions control. We are interested in the impact on NRC regulations of (1) the current Congressional requirement for perpetual government custody of tailings sites and (2) the EPA standards for the cleanup of uranium and thorium mill sites after permanent closure.

11. Interim Surface Storage Facilities for Spent Fuel

The ACNW will address NRC concerns with a central interim HLW storage facility. We will identify issues that need consideration in surface HLW facilities, including handling operations, cask requirements, comparative risk of various options, and alternatives to dry storage.

We look forward to discussing this 1997 list of priority issues with you and the other Commissioners in the near future. We would welcome any comments and suggestions regarding additions, deletions, or changes in emphasis that you might wish to make.

Sincerely,



Paul W. Pomeroy
Chairman