



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

June 19, 1998

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

Dear Chairman Jackson:

**SUBJECT: ACNW COMMENTS ON NRC'S REVIEW OF THE DOE VIABILITY
ASSESSMENT**

The purpose of this letter is to provide ACNW comments on the potential role of the NRC staff in evaluating DOE's Viability Assessment (VA), which the DOE plans to submit to Congress in September 1998. During its 98th meeting, February 24-26, 1998, the ACNW heard presentations by the DOE staff on the status of and plans for completion of the VA. During its 100th meeting, April 21-23, 1998, the ACNW heard presentations by the NRC staff on its plan for reviewing the VA. Additional insights were gained during a two-day Working Group meeting on the near-field environment and the performance of engineered barriers held during the 101st ACNW meeting, June 10-12, 1998.

The VA will consist of four parts: (1) the preliminary design concept; (2) the total system performance assessment (TSPA-VA); (3) the license application (LA) and cost estimate; (4) the costs of construction and operation. The staff's review of elements (1), (3), and (4) will be limited. Specifically, for element (1), the staff will review the technical feasibility of the reference design as it relates to post-closure performance of the proposed repository. For element (3), the staff will review the adequacy of the test plans and schedules, and for element (4) it will review the performance confirmation plans and schedules. There are no plans to include pre-closure issues in the review, except as they may affect post-closure performance, nor are there plans to consider options not part of the reference design.

The staff's principal effort will be the review of element (2), TSPA-VA. The staff's TPA-3 code will allow it to conduct this review in the appropriately independent manner and also will allow it to be rigorous in expressing difficulties it may discern in DOE's analyses.

The ACNW concludes that the plans of the NRC staff to focus the review on post-closure analyses in the VA are appropriate, given the limited time and personnel available for the task. The post-closure aspects of the analyses to be presented in the VA are the aspects that are most likely to determine whether the Yucca Mountain site will continue to be technically viable. We also agree that the NRC staff should devote the greatest portion of its review to the reference repository design, as opposed to alternatives.

Although the ACNW agrees that post-closure analyses should be a primary focus of the review, we think that the NRC staff should use this opportunity to position itself for the more comprehensive reviews that will be required in an LA. We recognize that the staff has allocated only two months for its "formal" review of the VA. Nevertheless, we believe that NRC staff should continue its effort to evaluate the VA in more detail for issues that may be important for licensing beyond the two-month period.

We present below several specific observations and recommendations.

OBSERVATION 1: The review of the VA provides an opportunity for DOE and NRC to learn to focus on issues important to licensing an HLW repository. The staff plans to use the Issue Resolution Status Reports and the acceptance criteria included therein to guide the review of the VA.¹

RECOMMENDATION 1: We urge the staff to undertake the review of the VA with the recognition that it provides an opportunity for exploring the development of a Standard Review Plan for reviewing the HLW LA. In particular, we recommend that staff evaluate the adequacy of the acceptance criteria in the IRSRs for use in review of the LA.

OBSERVATION 2: At its 98th meeting, the ACNW asked representatives of DOE whether Volume I of the VA would provide a systems engineering overview of the entire VA. The ACNW believed that DOE's answer was ambiguous. In the absence of a systems approach to the VA, there is a danger that NRC's review could become bogged down in detail and miss critical linkages between components of the total repository system.

RECOMMENDATION 2: NRC should ensure it takes a systems approach in its review of the VA, by emphasizing the relationships between component performance and total system performance. Such an approach, which focuses on the contribution of individual components, is consistent with the evaluation of multiple barriers within a defense-in-depth and a risk-informed philosophy.

OBSERVATION 3: The pre-closure aspects of the proposed repository have received relatively little attention to date. The pre-closure period for an HLW repository will exceed the operating period for many other facilities licensed by the NRC. Furthermore, DOE has recently speculated that the operating phase of the planned repository may be extended to 100 years or longer.

RECOMMENDATION 3: The NRC staff should give some attention to pre-closure issues in its review of the VA. The ACNW believes that pre-closure issues (e.g., transportation of waste, waste acceptance for emplacement, licensing of operators, etc.) will be very important to the

¹"Overview of NRC's Issue Resolution Process, Accomplishments, and Plans for Review of DOE's Viability Assessment," M. Federline and others, Proceedings of the Eighth International Conference on High-Level Radioactive Waste Management, American Nuclear Society, May 11-14, 1998.

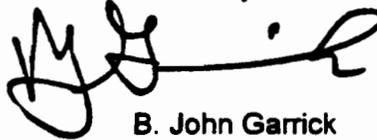
successful disposal of waste. Some attention to review of pre-closure aspects of the VA will be valuable to the NRC staff in preparation for work on the LA and would provide important feedback to DOE that should allow the licensing process to proceed smoothly. We believe that pre-closure issues must be considered more prominently than in the past to ensure the overall success of the project. Given that the Division of Waste Management may be occupied by post-closure aspects of the review, it may be helpful to use expertise elsewhere in the agency to consider pre-closure issues. For example, many of the issues relevant to the handling of spent fuel should be applicable to the proposed surface facilities at Yucca Mountain.

OBSERVATION 4. Major changes are taking place in the area of the engineered barrier system (EBS). The NRC staff has strongly focused its efforts in the past decade on the long-term far-field natural geological system. It is critical that the NRC staff adapt to changes in the importance being placed on the EBS.

RECOMMENDATION 4. The NRC staff should understand the strengths, deficiencies, and tradeoffs in the details of the EBS design, design options, and fabrication considerations that will be presented in the VA. The ACNW believes that the details of the design will assume critical importance beyond the VA if DOE proceeds with an license application. The NRC staff should use the review of the VA as an opportunity to begin a critical evaluation of the EBS design details.

We trust that our comments on the review of the viability assessment will be useful.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. John Garrick', written in a cursive style.

B. John Garrick
Chairman

