



UNITED STATES  
NUCLEAR WASTE TECHNICAL REVIEW BOARD  
2300 Clarendon Boulevard, Suite 1300  
Arlington, VA 22201

December 1, 2004

Dr. Margaret S. Y. Chu  
Director  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear Dr. Chu:

On behalf of the Nuclear Waste Technical Review Board and its Waste Management System panel, chaired by Board member Mark Abkowitz, I thank your staff for participating in the panel's meeting on October 13 and 14, 2004, in Salt Lake City, Utah. The Board members found the U.S. Department of Energy (DOE) presentations informative and thought-provoking.

**Transportation Planning.** The Board commends the DOE on its effort in developing a systematic approach to transportation planning. Attempts to adopt such an approach were evident at the national transportation program level and within specific components of the planning effort (e.g., transportation security risk assessment). The Board believes that developing a successful transportation plan will require significant interactions, both operationally and institutionally. The following are examples of potentially fruitful areas for such interactions.

- Exchange of technical information between the DOE and the railroad industry on equipment design and system operations.
- Dialogue about technical issues between the DOE and the utilities in developing a reliable and credible schedule for the amount and types of spent fuel to be shipped.
- Exchange of technical information with other DOE and private spent-fuel transportation shippers to learn from their planning experiences.

The Board observes that presently there is not an overarching implementation organization that can develop a safe, secure, and efficient transportation system. To ensure successful technical integration, it is important for the DOE to develop specific logistical plans that identify the entity that is responsible for each system component and the key interactions required of each involved entity. A detailed strategic plan for transportation could be used to guide this effort. For example, the DOE needs to focus its attention on the transportation options within Nevada for both rail and truck. In particular, contingency plans need to be developed for higher levels of truck use in case a rail spur is not built or is delayed beyond the initiation of the shipping campaign.

The Board is concerned that non-technical constraints, such as those related to schedule or budget, may compromise transportation planning. The Board urges the DOE to provide adequate resources for supporting transportation planning issues and to exercise great care in how decisions are made so that the integrity of the planning process is preserved and key technical issues that warrant serious consideration are not overlooked.

The public comment periods at the meeting provided evidence that communication between the DOE and stakeholders could be improved to ensure that the public understands the technical aspects of the program and the DOE's plans. This is particularly important in the context of the presentation on risk perception.

**Security and emergency-response planning.** The DOE's approach to transportation security risk assessment appears to be organized appropriately. The Board notes, however, that determining the probabilities of potentially disruptive events is very difficult. Development and use of realistic scenarios can enhance the technical basis of the overall analysis and could lead to establishment of an effective response infrastructure. Emphasis on defensive and mitigative actions should be commensurate with the likelihood and consequences of the scenarios. Risk assessment results, as they become available, should be merged into an integrated, all-hazards risk management approach that fully considers both safety and security threats.

The DOE's approach to emergency-response planning through the 180(c) program appears to be based too much on funding formulas and not enough on the underlying objective of ensuring that adequate emergency-response capability exists along all selected routes. The DOE needs to define what constitutes a minimum acceptable level of emergency response along each segment of each transport route and needs to develop a method for verifying that such capability exists. Also important is understanding the general expectations of security provisions—for example, the role of safe havens, notifications, escorts, and emergency personnel, including first responders. Shipments of foreign research-reactor fuel can provide useful information in this regard.

**Transportation risk assessment.** The DOE's approach to transportation risk assessment has been largely one of applying deterministic models (i.e., RADTRAN). As described at the meeting, RADTRAN appears to include several conservative assumptions. The Board was pleased to learn that version 5 of RADTRAN has the capability (using Latin Hypercube Sampling) to perform uncertainty analysis, thus providing a modeling capability more closely aligned with the Board's desire to see transportation analyses that are more risk-based and realistic. After code testing and validation, we look forward to seeing transportation risk results based on RADTRAN 5.

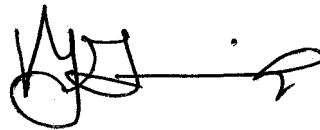
Related to assessing transportation risks is the Package Performance Study being planned by the U.S. Nuclear Regulatory Commission (NRC). The Board would like to be kept informed on the status of the NRC study. We are particularly interested in the technical adequacy of the test program in which the rail cask will be tested and how the tests will be used to validate the models used in other cask designs, such as those used for truck shipments.

**Route selection.** Evaluation and designation of shipment routes by the DOE is important. This topic is of great interest to stakeholders along selected transportation corridors. Closely related is the decision on using dedicated trains, because a decision not to use dedicated trains could limit the routes available for consideration. The Board believes that it is appropriate to involve state regional groups in establishing routing criteria and recommending preferred routes, although the variation in views of these groups on this issue is evident. Moreover, tribal groups may not be adequately represented in these deliberations. To ensure that the state regional groups are successful in their efforts, this process must be managed carefully and diligently. Of particular importance, the DOE needs to ensure that the technical issues involved in route selection are identified and that sound methods for addressing the issues are developed and applied.

**Program integration.** The DOE presentations did not demonstrate the degree of program integration needed to ensure that the transportation system will operate successfully. The DOE needs to plan for and be able to demonstrate harmonization of cask design, fleet acquisition, waste acceptance, operational practice, and other activities that must be carried out at reactor sites, during shipping, and at the repository. The Board looks forward to further discussion of program integration in future meetings.

Thank you again for the DOE's support of this meeting.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. John Garrick', with a long horizontal flourish extending to the right.

B. John Garrick  
Chairman