



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

January 6, 2012

Dr. Monica Regalbuto  
Deputy Assistant Secretary, Fuel Cycle Technologies  
Office of Nuclear Energy  
U.S. Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585-0620

Dear Dr. Regalbuto:

On behalf of the U.S. Nuclear Waste Technical Review Board, I am pleased to respond to your request to the Board for comments on *A Management Proposal for Salt Disposal Investigations with a Field Scale Heater Test at WIPP* (SDI proposal), which was prepared by the U.S. Department of Energy (DOE) Carlsbad Field Office and issued in June 2011.

As you know, Dr. Mark Nutt recently presented to the Board<sup>1</sup> a rationale for using features, events, and processes (FEPs) to identify research and development (R&D) issues that are linked to a generic safety assessment, and setting R&D priorities based on the importance of the issues to the generic safety case. The Board supports such “generic” R&D tasks in the context of geologic repository program development, as long as they: (1) are based on realistic concepts of host rock geology, (2) identify and evaluate significant FEPs and constitutive relationships, and (3) can be demonstrated to reduce uncertainties and adverse risk related to technical and scientific generic repository objectives.

The SDI proposal cites an approach similar to one presented by Dr. Nutt for evaluating knowledge gaps and data needs, and setting R&D priorities to support development of a generic repository safety case:

*The core concept is the systematic reduction of uncertainty in models through the iterative process of model development, experimental studies, and repository modeling to assess geologic disposal viability... Therefore, residual uncertainties propagated through a generic model of a repository must be quantified, bringing in other relevant considerations and processes (e.g., scenario development, regulatory criteria, subsystem models) in order to fully define a Performance Assessment analysis. These results, vetted at regular intervals with stakeholders, are used to inform modification of the science program<sup>2</sup>...*

However, the Board notes that the SDI proposal does not adhere to such an approach, nor does it specify the basis for the proposed work. Instead the proposal identifies gaps in experimental work and modeling and proposes R&D activities that do not appear to be ranked by their importance in meeting generic repository objectives. The Board believes that not presenting an explicit evaluation

---

<sup>1</sup> Mark Nutt, “Used Fuel Disposition Campaign Disposal R&D Roadmap Overview,” NWTRB Fall 2011 Board Meeting, Salt Lake City, Utah, September 13, 2011.

<sup>2</sup> SDI proposal, p. 13.

of generic salt information needs in the context of a relevant uncertainty and risk assessment is a significant shortcoming of the proposal. Two additional specific comments on the content of the proposal are discussed in the following paragraphs.

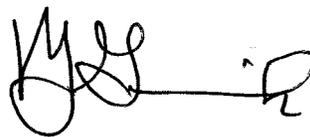
First, it is difficult to assess the importance of work in salt relative to other possible host rocks without knowing the basis for the selection of salt. Field tests are expensive, and a decision to proceed hastily with salt R&D might constrain resources for equally important, or more important, work in other geologic media. The Board cannot make a proper evaluation of the proposed work without knowing what alternatives are under consideration.

Second, the proposal includes references to salt formations and salt domes, but it is unclear whether the proposed tests at WIPP are intended to investigate the suitability of generic salt as a medium for disposing of heat-generating radioactive waste or if the tests are focusing only on the potential of bedded salt for such a purpose. In either case, the Board suggests that the proposal also should provide the technical basis for performing the proposed testing at WIPP.

The comments above raise questions about whether decision-makers have sufficient information to make the necessary decisions concerning prioritization of work related to R&D on salt. The presentation of the SDI proposal makes it appear to be essentially a qualitative list of information needs along with the proposed laboratory, field, and modeling tasks identified to supply the information. How important the individual tasks are to the engineering and science objectives is not addressed, and whether the work as proposed fits the stated objective of the SDI proposal to be “as productive, integrated, and efficient as can be achieved”<sup>3</sup> is unclear.

As you know, the Board is planning a trip to WIPP on March 6, 2012, in conjunction with our public meeting in Albuquerque, New Mexico, on March 7, 2012. If you would find it useful, we could use that opportunity to arrange a discussion of the SDI proposal with staff from your office and the DOE Carlsbad Field Office. As you also know, the public meeting is focused on geological disposal, so a discussion at that time may be particularly appropriate.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. John Garrick', with a stylized flourish at the end.

B. John Garrick  
Chairman

cc:

Dr. Peter Lyons, Assistant Secretary for Nuclear Energy

Dr. William Boyle, Director, Office of Used Nuclear Fuel Disposition, Research and Development

Mr. Jeff Williams, Deputy Director, Office of Used Nuclear Fuel Disposition, Research and Development

---

<sup>3</sup> SDI proposal, p. (v)