



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

November 5, 2008

Mr. Edward F. Sproat III
Director
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Dear Mr. Sproat:

The U.S. Nuclear Waste Technical Review Board appreciates the participation of the U.S. Department of Energy (DOE) in the Board's meeting in Las Vegas, Nevada, on September 24, 2008. The central focus of the meeting was the integration of waste acceptance, transportation, and repository operations to determine the feasibility of the system for operating as planned. Participation in the meeting by individuals from DOE, the nuclear industry, and the State of Nevada provided the Board with a broader perspective of how the system will operate and the challenges that DOE will face during implementation. The Board's observations and comments on the material presented at the meeting are summarized below.

Program and Project Overview

In his presentation on the project's status and the licensing process, Dr. William Boyle, Director of the Regulatory Authority Office in DOE's Office of Civilian Radioactive Waste Management, indicated that the relationship between DOE and the Board would not change as a result of the Nuclear Regulatory Commission's (NRC) docketing of DOE's license application (LA) in early September.

Integrated System Operations

Panel discussions were held on waste acceptance and transportation and on the integration of these functions with repository operations. The discussions included representatives from DOE, the State of Nevada, and the nuclear industry. Apparent from these discussions is that DOE has analyzed a single scenario based on certain optimistic assumptions, such as receiving 90 percent of commercial spent nuclear fuel (CSNF) in transportation-aging-disposal (TAD) canisters, an optimal waste receipt schedule (both CSNF and DOE canisters), and the absence of any upset conditions. The Board understands that actual operations will begin many years from now but believes that DOE should perform additional analyses to determine the effects on the system if conditions differ from those presently assumed. In particular, the following scenarios should be addressed:

1. Delay in construction or inability to construct the Nevada rail line.
2. Delay in deployment of TADs beyond 2013.
3. Less than 90 percent of CSNF arriving in TADs.
4. Seasonal variation in the receipt rate of CSNF.
5. Delay in receipt of DOE waste, or DOE waste not received in the order needed.

6. Less than 75 percent availability of the surface facilities.
7. Occurrence of upset conditions in any part of the system.
8. Some utility sites without usable short-line rail connection to a main rail line.
9. Provisions DOE is making to ship spent fuel that is in storage casks at utility sites.
10. Provisions DOE is making regarding dual-purpose spent fuel storage systems to avoid repackaging into TADs at Yucca Mountain.

Performing such analyses now would give DOE a better understanding of system robustness and flexibility and would allow modifications, if necessary, early in the design process.

Surface Facility Design

The nature of the presentations on surface facility design seemed to reflect a lack of understanding of the design's technical basis. The presentations did not illustrate how the facilities would work and showed only the potential flow of material through buildings. For example, there were no clear explanations for (1) why the building walls need to be 4 feet thick, (2) the percentage of design completeness, and (3) how the fuel pool cooling and cleanup system operates. Moreover, many of the design elements of the wet handling facility appear to be nonstandard, suggesting that few lessons learned or industry input were incorporated into the design.

The entire issue of seismic design basis needs to be reevaluated for consistency with commercial nuclear facilities built for the same purpose. Clarity of the design requirements for surface facilities needs to be addressed to avoid what appears to be excessive design for meeting seismic effects of the surface facilities that will not need to last for hundreds of thousands of years.

Repository Site Operations

The Board continues to believe that DOE needs a comprehensive integrated throughput model for the surface facilities with time steps compatible with the task durations. The assumption that input for each facility will be available when needed and that output will be removed when processing is complete do not represent a realistic situation, nor was any justification for the 75 percent availability provided. The Board is looking forward to DOE's providing a plan for implementing a realistic surface facility throughput model that can be used to evaluate the design and determine the effects of off-normal events, including safety implications.

Equipment and Facility Testing Program

The equipment and facility testing program described by DOE reflected a broad understanding of program components. However, the Board is concerned that the feasibility of several unique components or operations (drip shield fabrication and installation, waste package fabrication, emplacement vehicle operation, etc.) has not been confirmed, yet the items have been included already in the design. The Board seeks assurance that these unique components will function as designed and requests a schedule for implementing the prototyping and testing program.

Thank you again for DOE's participation in the Board's September meeting. The Board looks forward to continuing its technical review of DOE's activities in accordance with its congressional mandate.

Sincerely,

{Signed by}

B. John Garrick
Chairman