

Nuclear Waste Technical Review Board Strategic Plan for FY 2001-2006 (Revised March 2001)

Statement of the Chairman

The U.S. Nuclear Waste Technical Review Board was established as an independent agency of the United States Government on December 22, 1987, in the Nuclear Waste Policy Amendments Act. Congress charged the Board with evaluating the technical and scientific validity of activities undertaken by the Secretary of Energy, including characterizing a site at Yucca Mountain, Nevada, for its suitability as the location of a permanent repository for civilian spent nuclear fuel and high-level radioactive waste. The Board also reviews activities related to packaging and transporting such waste. In creating the Board, Congress realized that an unbiased technical and scientific evaluation of the credibility of site evaluation and other high-level radioactive waste management activities would be crucial to public acceptance of any approach for disposing of the waste.

The Board takes its peer review role very seriously. The Board strives to provide Congress and the Sec-

retary of Energy with completely independent, credible, and timely technical and scientific program evaluations and recommendations achieved through peer review of the highest quality. The Board's technical and scientific findings and recommendations are included in reports that are submitted at least twice each year to the Secretary of Energy and the Congress. The Board can make recommendations but cannot compel the Department of Energy to comply.

The attached strategic plan includes the Board's goals and objectives for 2001 through 2006. *If* the site is recommended for repository development, much important technical and scientific work will continue on repository design, and transportation and packaging of the waste will gain in prominence. Because many critical decisions will be made throughout this period, we believe that the Board's ongoing review of these efforts will continue to be critically important.

On behalf of the Board,
Jared L. Cohon, Chairman

Mission

The Board's mission, established in the Nuclear Waste Policy Amendments Act (NWPAA) of 1987 (Public Law 100-203), is to "...evaluate the technical and scientific validity of [high-level radioactive waste management] activities undertaken by the Secretary of Energy, including site-characterization activities; and activities related to the packaging or transportation of high-level radioactive waste and spent nuclear fuel." By law, the Board shall cease to exist not later than one year after the date on which the Secretary begins disposal of high-level radioactive waste or spent nuclear fuel in a repository.

Vision

By performing ongoing technical and scientific review and evaluation of the highest quality, the Board makes a unique and essential contribution to enhancing the technical and scientific credibility of the Secretary of Energy's efforts to characterize the Yucca Mountain site for its suitability as the location of a permanent repository for the safe disposal of spent nuclear fuel and high-level radioactive waste. If the Secretary and the President recommend the site and if the site is accepted, the Board will continue to perform critical technical and scientific peer review of performance-confirmation work. If construction of a repository proceeds at the site, the Board also will provide technical and scientific oversight of activities related to packaging and transporting the waste to the repository.

Values

To achieve its goals, the Board conducts itself according to the following values.

The Board strives to ensure that its members and staff have no conflicts of interest—real or perceived—related to the Secretary's efforts to characterize the Yucca Mountain site or to package and transport spent nuclear fuel and high-level radioactive waste.

The Board members arrive at their conclusions on the basis of objective evaluations of the technical and scientific validity of the Secretary's activities.

The Board's practices and procedures are open and conducted so that the Board's integrity and objectivity are above reproach.

The Board's findings and recommendations are technically and scientifically sound and are based on the best available technical analysis and information.

The Board's findings and recommendations are communicated clearly and in time for them to be most useful to Congress, the Secretary, and the public. The Board encourages public discussion of its findings and recommendations at its meetings.

NWTRB General Goals and Objectives

The national goal for radioactive waste management established by Congress in the Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act of 1987 is safe disposal of civilian spent nuclear fuel and high-level radioactive waste in a permanent geologic repository at a suitable site or sites. In the acts, Congress directed the U.S. Department of Energy (DOE) to characterize a site at Yucca Mountain, Nevada, to determine its suitability as the potential location of a permanent repository for high-level radioactive waste. Congress charged the Nuclear Waste Technical Review Board with reviewing the technical and scientific validity of the Secretary of Energy's activities associated with achieving this goal, including characterizing the site and packaging and transporting the waste. The Board's general goals have been established in accordance with its congressional mandate.

General Goals

To accomplish its congressional mandate, the Board has established four general goals.

1. Ensure that technical and scientific activities undertaken by the DOE related to determining the suitability of the Yucca Mountain site as the possible

location of a permanent repository and predicting the performance of a potential repository establish a sound technical basis for a decision on whether to recommend the site for repository development.

2. Ensure that technical and scientific activities undertaken by the DOE related to designing a repository and waste packages are well integrated and establish a sound technical basis for designing the repository system, including the engineered barrier system (EBS).
3. Ensure that technical and scientific activities undertaken by the DOE related to packaging, handling, and transporting spent nuclear fuel and high-level radioactive waste to a permanent repository are well integrated and establish a sound technical basis for designing and operating a waste management system.
4. Ensure that long-term technical and scientific activities undertaken by the DOE, including performance confirmation and design modifications, establish a sound technical basis for reducing uncertainties related to repository performance, operating a repository, and revising repository and waste package designs. (Will apply only if the site is found suitable and a site recommendation is approved.)

Strategic Objectives

To achieve its general goals, the Board has established the following long-term objectives.

1. Objectives Related to Site Suitability and Predicting Repository Performance

- 1.1 Evaluate the technical and scientific validity of DOE studies, testing, and analyses supporting a decision on whether to recommend the Yucca Mountain site.
- 1.2 Evaluate the hydrologic, geologic, chemical, and other natural processes at the Yucca Mountain site that establish the foundation for predicting repository performance.
- 1.3 Review the technical and scientific validity of models used to predict repository performance.

- 1.4 Evaluate the DOE's progress in developing a safety strategy for the Yucca Mountain site.
- 1.5 Review the *Record of Decision* for the final environmental impact statement (EIS) for a potential Yucca Mountain site.

2. Objectives Related to the Engineered Repository System

- 2.1 Evaluate repository and waste package designs, including the technical bases for the designs.
- 2.2 Review the progress and results of materials testing being conducted to address uncertainties about waste package performance.
- 2.3 Assess the integration of science and engineering in the DOE program, paying particular attention to the effects of site-characterization studies (e.g., modeling, testing, and analyses of thermal, mechanical, and chemical effects) on repository and waste package designs.

3. Objectives Related to the Waste Management System

- 3.1. Evaluate the accuracy and reasonableness of analyses, methods, and major assumptions used by the DOE in estimating health and safety risks associated with transporting spent nuclear fuel and high-level radioactive waste.
- 3.2. Review the adequacy of requirements for developing the transportation infrastructure necessary to move significant amounts of spent nuclear fuel from individual reactor sites to a DOE storage or disposal site. Compare these requirements with current transportation capabilities, and determine the effort needed to develop a large-scale transportation capability.
- 3.3 Review the adequacy of the DOE's plans for safely handling and packaging spent nuclear fuel and high-level radioactive waste for transport to a permanent repository.
- 3.3. Evaluate the effectiveness of the DOE's efforts to integrate the various components of the waste management system (packaging, handling, transport, storage, and disposal of the waste).

3.4. Review the DOE's plans for addressing public safety concerns and for enhancing safety capabilities along transportation corridors. This includes activities related to development of plans (e.g., route selection), coordination, accident prevention (e.g., improved inspections and enforcement), and emergency response.

4. Objectives Related to Long-Term Activities

(Will apply only if the site is found suitable and a site recommendation is ratified)

4.1 Monitor performance-confirmation activities undertaken by the DOE that are designed to reduce uncertainties related to repository performance, including corrosion testing.

4.2 Monitor performance-confirmation activities undertaken by the DOE, and evaluate the need to revise repository or waste package designs on the basis of the results of such activities.

Achieving the Goals and Objectives

Congress granted significant investigatory powers to the Board in the NWPAA. In accordance with the NWPAA, the Board may hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence as it considers appropriate. By law, no nominee to the Board is employed by the DOE or its contractors. The Board has adopted strong anti-conflict-of-interest procedures that go even further to ensure that the Board avoids even the appearance of a conflict.

Subject to existing law, the DOE is directed to provide all records, files, papers, data, and information requested by the Board, including drafts of work products and documentation of work in progress. According to the legislative history, in providing this access, Congress expected that the Board would review and comment on DOE decisions, plans, and actions as they occurred, not after the fact. The Board believes that it has adequate powers under current law to achieve its goals and objectives.

Much of the Board's information gathering is done at open public meetings where the DOE, its contractors, and other program participants present technical information. The Board's five panels meet as needed and are organized around specific issue areas. The full Board meets three or four times each year. The Board also gathers information through field trips to the Yucca Mountain site, visits to contractor laboratories and facilities, and informal meetings with individuals working on the project. Although the Board's information-gathering activities are carried out primarily to further the Board's review, they have the collateral benefit of promoting communication and integration of technical information within the DOE program and facilitating the dissemination of information among interested parties outside the program. Analyses of the information gathered by the Board are performed by its members, the Board's professional staff, and consultants hired to supplement the expertise of the Board and the staff.

The DOE is scheduled to decide in 2001 whether to recommend the Yucca Mountain site for repository development. If the decision is positive and the President and Congress approve the recommendation, the DOE will apply to the Nuclear Regulatory Commission (NRC) for a license to construct and operate a repository at the site. If the license is approved, the expectation is that testing will continue at the site to increase confidence in predictions of repository performance. The Board expects to review the analytical processes as well as the base of technical information used by the DOE in making decisions about site recommendation. The Board also will review the technical and scientific validity of activities related to confirmatory testing and to transportation and packaging of spent nuclear fuel and high-level radioactive waste. The Board reports the results of its reviews at least twice each year to Congress and the Secretary of Energy. Additional communication occurs as needed. Such communications are available to the public either by request or on the Board's Web site at www.nwtrb.gov.

Crosscutting Functions

Several entities and agencies share responsibility for the ultimate national goal established by Congress of packaging, transporting, and disposing of spent nuclear fuel and high-level radioactive waste in a geologic repository at a suitable site. Although there may be crosscutting areas of interest, the Board's role is unique among those involved in managing high-level radioactive waste. For example:

Congress and the Administration, including the Secretary of Energy, make policy decisions on what the national goals will be and how they will be implemented. The Board's role in this process is to help ensure that policy-makers are given unbiased and credible technical and scientific analyses and information.

State and local governments comment on and oversee DOE activities. The Board's oversight activities are different in that they are (1) unconstrained by any stake in the outcome of the endeavor besides the credibility of the scientific and technical activities, (2) confined to scientific and technical evaluations, and (3) conducted by individuals nominated by the National Academy of Sciences and expressly chosen by the President for their expertise in the various disciplines represented in the DOE program.

Federal agencies that have roles in achieving a safe waste management program include the DOE, the NRC, the Environmental Protection Agency (EPA), the Department of Transportation (DOT), and the United States Geological Survey (USGS). The DOE and its contractors are responsible for developing and implementing the waste management system and for planning and conducting research activities related to disposal, packaging, and transportation of spent nuclear fuel and high-level radioactive waste. The NRC is the regulatory body authorized to license the construction and operation of the repository to ensure protection of public health and safety and the environment. The EPA is the agency given the responsibility to issue health-based safety standards. The DOT is responsible for regulating the transportation of the waste. The USGS partici-

pates in site-characterization activities at the Yucca Mountain site. The Board's role is unique among these federal agencies: perform ongoing, independent review and oversight of the technical and scientific validity of the Secretary of Energy's activities relating to civilian radioactive waste management, including site characterization and packaging and transportation of spent nuclear fuel and high-level radioactive waste, and communicate its findings and recommendations to Congress, the Secretary of Energy, and the public. The Board's evaluation of the technical and scientific validity of the Secretary's activities related to civilian radioactive waste management complements and enhances the work of other agencies involved in achieving the national goal.

Key External Factors

Some factors that are beyond the Board's control could affect its ability to achieve its goals and objectives. Among them are the following:

The Board has no implementing authority. The Board is by definition and mandate a review body that can only make recommendations to the DOE. Congress expected that the DOE would accept the Board's recommendations or indicate why the recommendations should not be followed. However, the DOE is not legally obligated to accept any of the Board's recommendations.

To increase its effectiveness, the Board has developed procedures for increasing the relevance of its findings and recommendations for Congress, the Secretary, DOE program managers, and the public. The Board's recommendations and the DOE's responses are included in Board reports to Congress and the Secretary. If the DOE does not accept a Board recommendation, the Board's recourse is to advise Congress or reiterate its recommendation to the DOE, or both.

Legislation could affect nuclear waste policy. Congress has considered nuclear waste legislation several times in the last few years, and the current Congress may vote on legislation in the next two years. The effects of such legislation, if enacted, on

the program or the Board's activities are not currently known.

The Board will evaluate the status of these external factors, identify any new factors, and, if warranted, modify the "external factors" section of the strategic plan as part of the annual program evaluation described below.

Evaluating Board Performance

The Board will conduct an annual review of its actions in achieving its performance goals from the previous year. The Board believes that measuring its effectiveness by directly correlating improvements in the DOE program with Board actions and recommendations would be ideal. However, the Board has no implementing authority, so it cannot compel the DOE to comply with its recommendations. Consequently, a judgment about whether a specific recommendation had a positive outcome for the DOE program is, in most cases, (1) subjective and (2) an imprecise indicator of Board performance because implementation of Board recommendations by the DOE is outside the Board's direct control. Therefore, to measure its performance in a given year, the Board has developed the following performance measures.

In evaluating its performance, the Board will consider (1) whether the reviews, evaluations, and other activities included in its performance goals have been completed; and (2) whether the results of reviews, evaluations, and other activities undertaken under the auspices of program goals have been communicated in a timely, understandable, and appro-

priate way to the Secretary of Energy and Congress. The results of this evaluation will constitute the Board's assessment of its performance for the year. The Board will regard its performance as minimally effective if the activities, reviews, evaluations, and other activities included in its annual performance goals were completed. The Board will regard its performance as effective if those activities were completed and the results were communicated in a timely way to the Secretary of Energy and Congress.

The Board will use its evaluation of its own performance from the current year, together with its assessment of current or potential key issues of concern related to the civilian radioactive waste program, to establish its annual performance goals and to develop its budget request for subsequent years. The results of the Board's performance evaluation are included in the Board's annual summary report to Congress and the Secretary.

Congressional and Stakeholder Consultations

In developing its original strategic plan, the Board consulted with the Office of Management and Budget, the DOE, congressional staff, and members of the public and provided a copy of the plan to the NRC and to representatives of state and local governments. The Board solicited public comment and presented its strategic plan at a session held expressly for this purpose during a meeting in Amargosa Valley, Nevada, on January 20, 1998. A copy of the plan is available on the Board's Web site: www.nwtrb.gov.