



UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

1100 Wilson Boulevard, Suite 910
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December 5, 1995

Dr. Daniel A. Dreyfus
Director
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1000 Independence Avenue, SW
RW-2/5A-085
Washington, DC 20585

Dear Dr. Dreyfus:

On August 7, 1995, the U.S. Department of Energy (DOE) published in the *Federal Register* a notice of intent to prepare an environmental impact statement (EIS) for a repository at Yucca Mountain, Nevada. The U.S. Nuclear Waste Technical Review Board offers the following comments on the scope of the proposed EIS. These comments reflect concerns that the Board has voiced about the program over the last few years.

Alternatives to be evaluated. The notice of intent identifies three alternatives (in addition to the "no action" alternative) to be evaluated in the proposed EIS. These alternatives are characterized by the thermal loading of the repository (<40, 40-80, and >80 MTHM per acre). In the Board's view, the DOE also needs to identify alternatives to engineered aspects of the repository other than thermal loading including, but not limited to, repository layout and construction, waste disposal package materials and construction, spent fuel ageing, and the materials and emplacement methods to be used for backfilling and closing the repository. Alternatives for the major operational aspects of the repository also should be considered including human-operated alternatives to remote waste emplacement and monitoring. Design and operational features may have significant long-term effects on waste isolation in addition to short-term effects on natural resource consumption, emissions of pollutants during construction and waste package fabrication, and exposure of workers to ionizing radiation. The significance of these effects should be evaluated in the proposed EIS.

Quantity of waste to be considered. The DOE's notice of intent indicates that a maximum repository inventory of 70,000 tonnes of heavy metal in spent fuel and high-level waste will be considered, corresponding to the limit specified in the Nuclear Waste Policy Act. There is a reasonable likelihood, however, that this limit eventually will be revised upward if a repository is developed at Yucca Mountain. The Board recommends that the Yucca Mountain repository EIS also evaluate the environmental effects of

disposal of the entire foreseeable inventory of both defense and commercial spent fuel (assuming no new orders or license extensions for nuclear power plants) and defense high-level waste in that repository.

Types of waste to be considered. The DOE's notice of intent indicates that only spent nuclear fuel and high-level radioactive wastes will be assumed to be emplaced in a Yucca Mountain repository. The Board recommends that the environmental effects of disposal of other wastes, such as "greater-than-Class C" wastes and surplus plutonium from the nation's nuclear weapons program (in forms analogous to spent fuel or high-level waste), also be evaluated. Although true that the DOE currently has no legal authority to place such wastes into a Yucca Mountain repository, it is reasonable to anticipate that the DOE's authority may be expanded in the future. Thus, one of the alternatives to be evaluated in the EIS should be disposal of a broader range of types of wastes than proposed in the notice of intent.

Environmental issues to be examined. It is unclear from the notice of intent whether the DOE intends to evaluate the significance of potential long-term environmental effects other than releases of radioactive materials from the repository. The Board has long been concerned that the DOE address possible changes to the overlying ecosystem caused by heat and refluxing water vapor and has recommended that the DOE initiate studies to develop the technical basis for projecting the nature, intensity, and scale of those changes. The Board continues to believe that the repository EIS should project the nature and duration of thermally induced ecosystem changes and evaluate their significance for each of the alternatives included in the EIS.

Potential revisions to performance standards. The notice of intent recognizes that the regulatory criteria of the U.S. Environmental Protection Agency and the U.S. Nuclear Regulatory Commission will influence the environmental effects of a Yucca Mountain repository. Those regulatory criteria are to be revised, perhaps substantially, in the coming years. The Yucca Mountain repository EIS needs to consider likely revisions to the regulatory criteria and the effects, if any, that those revisions might have on the environmental effects of repository site characterization, facility development and operation, and long-term performance.

Preparation of this EIS is a critical step in developing a repository at Yucca Mountain. To make an environmentally sound decision about the design and operation of a repository, it is important that an adequate range of alternatives be evaluated. The comments offered by the Board in this letter may tend to expand the scope of the EIS compared to the scope anticipated in the notice of intent. Although an expanded scope may make it more difficult to complete the EIS on schedule, the Board believes that the risk of later challenges to the adequacy of the EIS will be reduced, as will the risk of delay in developing a repository. The Board encourages the DOE to evaluate a broader range of alternatives to improve the decisions that will be based on the EIS and to reduce the risk of later delays in repository development.

The Board appreciates the opportunity to comment on the scope of the EIS for the proposed Yucca Mountain repository. As part of its congressionally mandated responsibilities, the Board plans to periodically review the DOE's progress in preparing this EIS with particular emphasis on the technical analysis upon which the document is based.

Sincerely,

John E. Cantlon
Chairman

cc:
Wesley Barnes
Ron Milner
Wendy Dixon