



UNITED STATES  
NUCLEAR WASTE TECHNICAL REVIEW BOARD

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February 21, 1997

Honorable Frank H. Murkowski  
Chairman  
Committee on Energy and Natural Resources  
United States Senate  
Washington, DC 20510-0202

Dear Senator Murkowski:

Enclosed are responses to the questions posed in your letter of February 6, 1997. As you read them, you will recognize that the Board understands its role to provide independent advice on the technical issues associated with the management of the country's high-level radioactive waste and spent fuel.

The Board also is keenly aware of the many issues and factors that must be considered in making decisions in this policy area. It realizes that some of these are technical issues, but many of them are not. The line that divides technical issues from non-technical ones is often not very clear, especially in a problem as complex as this. Nonetheless, it is because of this complexity - political as well as technical - that Congress and the Secretary can benefit from an independent source of technical advice.

Over the years, the Board has attempted to give Congress and the Secretary the full benefit of its considerable experience and expertise. On the question of interim storage, we believed that Congress and the Secretary would find it useful to have our views on the effect of a storage decision on the site characterization work at Yucca Mountain. We fully appreciate the fact that the Congress, along with the Executive Branch, will make the final policy choices.

Please let me or the Board's staff know if we may provide you or your staff with any additional information on the enclosed responses.

Sincerely,

Jared L. Cohon  
Chairman

cc:  
Senator D. Bumpers  
Enclosure

**Response to Written Questions from  
Senate Hearing on S.104  
The "Nuclear Waste Policy Act of 1997"  
February 5, 1997**

*Questions from Senator Frank Murkowski:*

1. *Those who oppose S. 104 have used the Board's report as evidence that the "technical and scientific experts" believe that a centralized temporary storage facility will not be needed. Is this the conclusion that the Board intended people to draw?*

On the contrary, the Board believes that a centralized storage facility will be needed and that generic planning for it should begin immediately. Significant advantages can be derived from siting a storage facility adjacent to a repository.

However, because there are no compelling technical or safety reasons to move spent fuel to a centralized storage facility for the next few years, siting a centralized facility near Yucca Mountain can be deferred until a technically defensible site-suitability determination is made. We estimate that such a determination can be made within four years, if current rates of progress in characterizing the site continue. Deferring the siting of a storage facility until that time will help to maintain the credibility of the site-suitability decision.

2. *In the March 1996 report, and in your testimony today, the Board cited three reasons for favoring DOE pursuit of disposal instead of storage at this time. They were that interim storage would harm the program "(1) by competing with the disposal program for resources, (2) by causing a perceived prejudicing of a future decision about ... the Yucca Mountain site, and (3) by eroding the impetus and political support for repository development." Taking each in turn:*

- a. *Is it the Board's view that Congress is not able to sort among the competing demands of program funding and provide appropriate direction to DOE?*

It was never the Board's intent to question the role or the abilities of Congress. The Board recognizes that Congress and the administration are the appropriate institutions for sorting out competing demands for funding of the civilian radioactive waste management program. The Board brought to the Congress's attention some potential risks associated with various scenarios for developing centralized storage. Having pointed them out, we fully realize that the political process will then take over and give them appropriate weight.

*b. Is it the Board's view that if temporary storage of spent nuclear [fuel] is carried out near Yucca Mountain that qualified scientists and regulators will endorse the site for a repository merely because spent fuel is in the neighborhood?*

Predicting the performance of a repository for thousands of years involves inherently large uncertainties. The Board believes that scientists and regulators can evaluate those uncertainties. Ultimately, however, the public and its representatives must have confidence that technical analyses count; if the analyses are viewed as facades serving only to justify foregone conclusions, public confidence cannot be achieved.

A premature decision to store spent nuclear fuel near the Yucca Mountain site could contribute to the perception that the suitability of the site for development as a repository has been prejudged and that the reviews by scientists and regulators were meaningless. The Board believes that decision-makers in the Congress and in the administration should be apprised of this possible loss of public confidence in the technical analysis so that it can be weighed along with other factors in deciding whether or when to develop a spent fuel storage facility near Yucca Mountain.

*c. Ultimate disposal of spent nuclear fuel and high-level radioactive waste has been the Nation's focus in this program since long before the enactment of the Nuclear Waste Policy Act. What evidence can the Board cite that the Nation will turn away from such a long standing goal merely because the Nation must live up to one of its most important environmental obligations.*

There has always been a tension between storage and disposal of this nation's high-level radioactive waste and spent fuel. With the passage of the 1982 Nuclear Waste Policy Act that tension was lessened by the clear commitment to disposal. As long as the repository remained the main mechanism for accepting waste from utilities, virtually all affected parties had a stake in the disposal program. The Board recognized in its spent fuel storage report the possibility that interest in the more technically difficult and complex disposal program might unavoidably weaken if storage became the primary path for waste acceptance.

*3. Given that the Nuclear Waste Policy Act directs the Nuclear Waste Technical Review Board to "... evaluate the technical and scientific validity of activities undertaken by the Secretary [of Energy] ... "on repository site characterization and transportation of spent nuclear fuel, why does the Board believe that it was appropriate for it to review and recommend policy options for waste acceptance and temporary storage as it did in its March 1996 report?*

The civilian radioactive waste management system is technically complex, and its various elements are closely tied together. Fully consistent with its statutory charge, the Board's report on spent fuel storage examined the possible implications for the *technical aspects* of the transportation and disposal program of a decision to develop a centralized

storage facility. The Board also noted that non-technical considerations may play a role in decisions about the storage of spent fuel.

4. *Dr. Cohon, I think you will freely concede that you are not an expert on the legislative process. I would like to clarify the distinction between the timeline for the passage of a bill, and the timeline for construction of a temporary storage facility. Your testimony indicates that you believe that a central storage facility will be needed, but there are not compelling reasons to move spent fuel for the “next several years.” Now if by several, you mean 2-3 years, this is about how long it would take to actually site and build a temporary storage facility after a bill becomes law. We cannot wait until we are ready to actually build the facility to try to begin the legislative process.*

*Aren’t our differences really ones of relatively small differences in timing, and might our timing actually converge?*

The differences in timing between the Board’s recommendation that selecting a site for a centralized storage facility await a technically defensible site-suitability determination and the approach set forth in Section 204 of S. 104 are not substantial. A small difference in timing, however, could substantially affect the DOE’s ability to make a technically defensible site-suitability decision. The country currently has a capacity to transport only a few hundred metric tons of spent fuel a year. Developing a transportation infrastructure necessary to move significant amounts of waste, including the transportation casks and enhanced safety capabilities along the routes, will take a few years longer than will be needed to develop the simple centralized storage facility currently envisioned by the DOE. A site-suitability decision could be made within those few years.

5. *My understanding of your testimony is that you think we should wait a couple of years to build an interim storage facility because it may create the perception that the science about Yucca Mountain is biased. DOE’s experts believe that they will have enough information in 1998 to make a decision about interim storage. The Board suggests that we wait until DOE makes its permanent repository site recommendation to the President two years later. This seems like a judgment based on psychology, not science.*

a. *Aren’t questions of public perception really more an issue for their elected representatives ?*

The Board wishes to emphasize its view that the viability assessment, scheduled to be completed in 1998, will not provide a strong enough technical basis for the determination of site suitability. With the additional work planned by the DOE following the viability assessment, along with other specific and circumscribed work recommended by the Board, the Board believes that a technically defensible site-suitability determination can be made within four years.

The civilian radioactive waste management program will have to sustain the support of the general public and the scientific and technical community for several generations. Such support may be more difficult to maintain if the determination of site suitability, perhaps the most critical step in the entire process of developing a repository, is not viewed as technically objective by very broad segments of the population.

- b. If the determination is made that Yucca Mountain is not suitable, is it the Board's opinion that we will need a central storage facility?*

The Board believes that one or more centralized spent fuel storage facilities will be needed somewhere if Yucca Mountain proves to be unsuitable for development as a repository.

*Questions from Senator Jeffrey Bingaman:*

- 1. Even if a centralized interim storage facility were to open tomorrow, would there be enough shipping casks available to move an appreciable amount of spent nuclear fuel from utilities to such a facility?*

The experience over the last 40 years in this country and abroad suggests that transporting spent fuel by truck or rail using the current generation of casks poses little risk to the general public. The casks that are available now, however, are sufficient to move just a few hundred metric tons of spent fuel a year. This is only a fraction of the 2,000 metric tons of spent fuel now being produced annually and less than one percent of the accumulated inventory at reactor sites, which is now 34,000 metric tons. New large-capacity casks, that will have to be as safe as the current generation of casks, may become available over the next five years or so should a market materialize for them.

- 2. What do you believe to be the value of a viability assessment of the Yucca Mountain site, as opposed to what you call in your testimony a "technically defensible suitability determination?"*

The Board believes that the viability assessment will provide an opportunity to evaluate a preliminary design for a repository at Yucca Mountain, what is known about the performance of a repository located there, what still remains to be learned, and the costs of continuing to characterize and potentially develop the site. The viability assessment will help the DOE to manage and to integrate the program more effectively. The information will also be useful to policy-makers as they review the disposal program.

But, as former OCWRM Director Dan Dreyfus told the Board in October 1996, the viability assessment will not provide a strong enough basis for making a technically defensible site-suitability determination. In particular, the viability assessment will not

include essential data and testing from an east-west crossing of the waste emplacement area that is needed to address critical uncertainties about the percolation of water in Yucca Mountain.

*3. Do you believe that a “performance assessment” model for considering site suitability of a repository is more or less appropriate than DOE’s previous approach, which focused on specific factors considered in isolation from each other?*

The Board believes that the DOE’s proposed revisions to its siting guidelines (10 CFR 960) are a step in the right direction. The Board, however, does have concerns about how the DOE plans to implement those guidelines. The DOE needs to ensure that the performance assessment reflects an underlying waste isolation strategy that retains the current philosophy of relying on multiple (defense-in-depth) barriers to contain and isolate the waste from the environment.

The Board also is concerned about the performance assessment being inappropriately driven by unwarranted assumptions. For that reason, it is critical that the logic and the analysis in the performance assessment be clearly laid out for both technical and lay communities and that both communities be given an opportunity to participate in the performance assessment’s development.

Finally, it is unclear whether factors such as transportation and socioeconomic effects, which will now only be considered in the repository environmental impact statement, will be accorded the same weight in the site recommendation decision as they would have received if they remained integral elements of a determination based on the siting guidelines.