

Statement of  
Dr. Jared L. Cohon, Chairman  
Nuclear Waste Technical Review Board  
before the  
Committee on Energy and Natural Resources  
United States Senate  
February 5, 1997

Good morning, Mr. Chairman and members of the Committee. My name is Jared Cohon. I am here today in my role as Chairman of the Nuclear Waste Technical Review Board. I have been a member of the Board since 1995 and three weeks ago I was appointed Chairman by President Clinton. I am trained as a civil engineer with a specialty in water and environmental systems analysis. My full-time job is dean of the School of Forestry and Environmental Studies at Yale University.

Today I will focus my remarks on three areas: the status of the scientific work at Yucca Mountain; the technical implications of the provisions of S. 104, which would establish a centralized storage facility for spent fuel; and the provisions of S. 104 that would undermine the effectiveness of the Nuclear Waste Technical Review Board. I would like to request that the two one-page summaries attached to my statement describing the Board and its views on spent fuel storage be entered into the hearing record.

As you know, Mr. Chairman, the Board was created as part of the 1987 amendments to the Nuclear Waste Policy Act. Under its charter, the Board conducts an independent evaluation of the technical and scientific validity of activities undertaken by the Secretary of Energy to implement that law. We are charged with reviewing the country's waste management system with a focus on the suitability of the Yucca Mountain site as the proposed location of a permanent repository for the disposal of civilian spent fuel and some high-level radioactive waste. The Board is required to report to the Congress and the Secretary of Energy twice a year on its findings and conclusions. The eleven members of the Board are appointed by the President from a slate of candidates selected on the basis of their expertise by the National Academy of Sciences.

I will begin today with a short discussion of the status of the Yucca Mountain site-characterization program. As you know, Mr. Chairman, the DOE has nearly completed excavation of a large repository-level tunnel that is being used to conduct important exploratory studies. The Board has long encouraged the DOE to construct this underground facility and commends the DOE for the progress it has made in this important area. DOE scientists have been analyzing data obtained from the facility for the past year or so. In many ways, the new information that has been gathered has confirmed beliefs about the site and about how well a disposal facility might perform if constructed there. But, in other important ways, the data collected has forced scientists to reevaluate some of their prior understanding of the site.

For example, in 1987, when it was selected as the only site to be characterized, one of the primary technical advantages of Yucca Mountain appeared to be that it was “dry.” And as recently as ten months ago, the amount of water estimated to enter the repository horizon was thought to be approximately 0.1 mm per year. However, new data collected in the exploratory tunnel last fall suggest that the amount of water percolating through the mountain could be significantly greater than anticipated.

What are the implications of this new information? Our expectations about the performance of the repository will depend most on estimates of how much water percolates through the site. We expect that water eventually will contact and corrode the waste packages and will, over thousands of years, dissolve the waste, perhaps carrying some of it to the accessible environment. While the new data do not necessarily mean that the site is unsuitable, it is clear that understanding how the natural and engineered barriers would act in combination to limit these releases is of crucial importance to the determination of whether this site can be judged suitable.

It is important for the Committee to understand that the current exploratory tunnel is located at the same level and close to, but not *in*, the proposed repository area. While extremely important data are being obtained from the current exploratory tunnel, direct observation of the repository block is necessary to address remaining uncertainties about water movement and faulting, and to help in determining the most appropriate design and operational strategy for the proposed repository. In the Board’s view, the best way to obtain the data needed is to construct a 4000-foot-long tunnel, 2-3 meters in diameter, starting at the current main tunnel and extending west directly into and across the proposed waste emplacement area. Constructing this east-west crossing conforms to standard engineering practice; you simply should not decide to embark on a major underground project without seeing firsthand what the relevant geology is like. We estimate that excavation of this tunnel would take about 6 months to complete and would cost about \$10 million.

I now would like to comment briefly on some key aspects of S. 104 from the Board’s perspective. Mr. Chairman, as I know you remember, last year the Board released a report on spent fuel storage. There were two key conclusions:

First, a centralized storage facility *will be needed*. Planning for it should begin immediately. However, there are no compelling *technical or safety reasons* to move spent fuel to a centralized storage facility for the next few years.

Second, significant advantages can be derived from siting a storage facility adjacent to a repository. However, to maintain the credibility of the site-suitability decision, siting a centralized storage facility near Yucca Mountain should be deferred until *a technically defensible site-suitability determination* can be made at Yucca Mountain. We have estimated that such a determination could be made within about four years, if current rates of progress continue at the site.

S. 104 would link a decision on siting a centralized storage facility to a viability assessment. The Board believes the viability assessment can serve an important function in focusing and

integrating the program, but it will not be a technically defensible suitability determination. The viability assessment will be based on very preliminary repository and waste package designs and insufficient data about the waste emplacement area. Thus, linking a decision about siting a centralized storage facility to the viability assessment could, in the Board's view, jeopardize the credibility of the technical site-suitability determination.

But developing a storage facility requires more than a siting decision; it also requires the development of a transportation system. The Board believes that the risks associated with transporting spent fuel are very low and are likely to remain low even when the number of shipments increases. However, the country currently has a capacity to transport only a few hundred metric tons of spent fuel a year. This is about 10-15 per cent of the commercial spent fuel generated annually. Developing a transportation infrastructure, including the transportation casks and enhanced safety capabilities along the routes, necessary to move significant amounts of waste will likely take a few years longer than will be needed to develop a simple centralized storage facility. Therefore, if we focus now on developing the transportation infrastructure, siting of a centralized storage facility could likely be deferred for a few years without significantly affecting the amount of spent fuel that will actually be moved from reactor sites.

Mr. Chairman, the Board believes that siting a centralized storage facility now at the Nevada Test Site will do little in the way of providing actual storage capacity while creating a real risk to the credibility of the process for determining the suitability of the Yucca Mountain site for repository development. At the same time, we understand that other considerations, including the need to accommodate judgments about waste acceptance, will enter into a final decision by the Congress and the administration on this complicated issue.

I would like to place on the record the Board's deep concern about language in S. 104 that would seriously limit the Board's ability to perform the job given it: To provide the Congress and the Secretary of Energy with an independent – and credible – technical review of the civilian radioactive waste management program. This program is complex, and its various elements are closely tied together — at least they should be. Limiting the Board's review to specific, and narrow, areas, as S. 104 would do, could adversely affect the relevance and completeness of the evaluation that the Board provides the Secretary and the Congress.

S. 104 would stringently limit the amount of time the Board could meet with the Secretary's representatives. Aside from serious questions about how this provision might be implemented, the Board believes that such a limitation is inappropriate, especially now when new data and analyses are beginning to pour in and when critical judgments, such as those included in the viability assessment, will have to be made soon.

Language in S. 104 also eliminates the Board's authority to obtain and review draft program documents. When the Board was created, the report accompanying the legislation stated: "The Board is expected to review the activities as they are occurring, rather than after the fact." Early access to draft material has been essential to the timeliness and relevance of the Board's independent technical review.

In conclusion, Mr. Chairman, the Nuclear Waste Technical Review Board looks forward to continuing to provide an unbiased and independent technical and scientific evaluation of this important and complex program. We are eager to support the Secretary and the Congress in achieving our common goal of finding a credible solution to the problems associated with spent fuel and high-level radioactive waste management.

This concludes my statement. I will be happy to answer any questions the Committee might have.