Statement of

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Nuclear Waste Technical Review Board

before the

Subcommittee on Energy and Power
Committee on Energy and Commerce
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Chairman Sharp and members of the Subcommittee.

I am John Cantlon, Chairman of the Nuclear Waste Technical Review Board. With me today is another member of the Board, Dr. Donald Langmuir. We are pleased to be here to provide the Board's perspective on challenges facing the civilian radioactive waste management program.

As you know, largely as a result of the leadership and efforts of Chairman Sharp, Congress created the Nuclear Waste Technical Review Board in the 1987 amendments to the Nuclear Waste Policy Act. The Board's charge is reviewing the technical and scientific validity of activities undertaken by the Department of Energy related to the management of spent nuclear fuel and some defense high-level radioactive waste. These activities include packaging, transporting, storing, and disposing of the waste as well as characterizing a site at Yucca Mountain, Nevada, to determine its suitability as a location for a permanent underground high-level waste repository.

Mr. Chairman, you have asked hearing participants to respond to three questions related to efforts to store and ultimately dispose of radioactive high-level waste. Some aspects of your questions are outside the technical purview of the Board, but we are pleased to provide our perspective on progress and our concerns related to the program. I also would like to outline some basic principles that we have articulated in the past that can provide guidance for the DOE as it develops its revised approach to site characterization and repository development. In addition, I will comment briefly on the Board's thinking about legislative proposals.

The Board's charter is a technical one. However, as the Board has conducted its review of the civilian radioactive waste management program during the past five years, it has become clear to us that in many cases a thorough evaluation of the technical and scientific aspects of the program must include an understanding of the institutional

factors that are affecting them. Those institutional factors include schedule and budget constraints, and the question of when and how the DOE can accept spent nuclear fuel from nuclear utilities.

Scheduling and budget considerations have significantly affected the direction, scope, and quality of the civilian radioactive waste management program since it was initiated by Congress in 1987. For the past several years, the OCRWM proposed a comprehensive set of site-characterization activities that were driven by very ambitious schedules and an expectation of large budget increases. Despite this, the DOE did not ask for or receive the resources it said were necessary to accomplish the job it set out for itself. Furthermore, a large share of the money it did receive went to fund overhead and infrastructure rather than direct project costs. Consequently, with each new budget cycle, important technical and scientific work was deferred, while the backlog of funding the OCRWM said it needed increased along with the balance in the Nuclear Waste Fund.

On several occasions, the Board drew attention to the fundamental inconsistency inherent in the relationships among the work the OCRWM said needed to be done, the resources being allocated to do the work, and the optimistic schedule the OCRWM had established for completing the work. The Board suggested that the DOE make three changes: (1) establish a waste management system with set priorities and intermediate goals, (2) allocate more money to scientific studies and less to overhead and infrastructure costs, and (3) set realistic target dates for achieving important intermediate goals, such as beginning underground excavation and testing and determining site suitability.

Last fall, when Dr. Dreyfus took over as director of the Office of Civilian Radioactive Waste Management, he and his staff recognized that problems had been created by the previous approach; they began to develop a plan to address these concerns. The Board commends the DOE's recognition of these problems as well as the willingness of current OCRWM leadership to tackle a job made more difficult by years of overly optimistic budget projections and unrealistic schedule deadlines.

To try to address these problems, the OCRWM has proposed a number of efforts referred to collectively as the proposed program approach or PPA. As yet we do not know much about the details of the PPA, but as presented at our last OCRWM briefing, the basic elements of this new approach include (1) beginning to provide multipurpose canisters or MPCs to utilities by 1998 for on-site waste storage, (2) focusing Yucca Mountain site-characterization activities on the early determination of site suitability, (3) extending the period of waste retrievability, and (4) eliminating or deferring some testing until a confirmatory testing phase that would begin after a license is obtained from the NRC to construct the repository.

The specifics of this proposed approach are still evolving. As a result, it is not possible at this time for the Board to make a technical assessment of the PPA. However, we can say that, from what we know now, there appear to be risks as well as opportunities associated with this new approach. Among the risks are the increased technical and scientific uncertainties that would be created because less data and analysis than previously planned would be provided "up front" for determining site suitability and for applying to the NRC for a license to construct a repository. The potential opportunities include another chance to better focus and streamline the program and to demonstrate progress by achieving clear, near-term goals.

The Board will review the details of the PPA as they become available — the fiscal year 1995 plan should be available in September, the out year plans by next fall. In the meantime, to make a meaningful contribution to the development of this new approach as it evolves, it may be most useful for the Board to reiterate some of the fundamental and still relevant technical and scientific recommendations it has made during the past several years and to note OCRWM's intent in so far as we can.

First, to expedite the determination of site suitability, begin underground exploration and testing as soon as possible. The Board first made this recommendation in 1991, and it remains pertinent. Getting underground to look at the site's complex geology is critical in determining whether the site is suitable for repository development. As we understand it, current plans call for beginning full operation of the tunnel boring machine in January of 1995. To have any

chance of completing underground excavation by the dates in the current schedule and initiating key long-term tests at the repository level, operation of the tunnel boring machine should commence as soon as possible. The most expeditious and cost-effective tunneling approach requires around-the-clock work shifts with as little interference from other activities as possible. This approach is standard practice in the construction industry.

Second, look at the management of high-level radioactive waste as a system and set priorities accordingly. In the past, program plans and activities have not been well integrated. Furthermore, the DOE has not given adequate consideration to the interdependent nature of the elements of the waste management system, from the generation of the waste through its storage, transport, and ultimate disposal. Using a systems view — based on a coherent waste isolation strategy — becomes even more critical now if a process will be used that increases reliance on postemplacement confirmatory testing — as opposed to providing comprehensive data and analysis prior to applying to the NRC for a license to construct the proposed repository. Misjudgments, if they are made, might not be recognized until a later date, which could make them much more difficult, time consuming, and costly to correct.

Third, set realistic schedules for achieving important intermediate milestones such as getting underground and determining site suitability. Although schedules are vital to maintain program momentum and measure progress, it is important that technical and scientific activities that previously were considered critical are not truncated or eliminated simply to meet arbitrary schedule deadlines. The Board understands the DOE's desire to demonstrate program progress and deal with perceived contractual obligations, but we believe that *unrealistic* schedule deadlines serve only to increase frustration and erode confidence when they are missed. Another concern is that the current schedules allow little time to accommodate the kinds of surprises that have been encountered worldwide in underground projects, once underground excavation has begun.

Fourth, increase the resources available for research and development of a robust, long-lived waste package. Since it issued its first report in March 1990, the Board has underscored the importance of research related to the development of engineered barriers, including a robust,

long-lived waste package, to help reduce uncertainties and enhance the long-term safety of the repository system. It appears the OCRWM plans to increase funding for waste package development — a move the Board strongly endorses.

Fifth, allocate program funds so that more money goes to scientific and technical work and less to indirect overhead and infrastructure costs. Provide a coherent organizational structure to enhance the effectiveness of the people and organizations involved with the program. Dr. Dreyfus already has completed a reorganization of federal personnel at OCRWM headquarters and at the Yucca Mountain Site Characterization Project Office and has indicated that in the future a greater share of available funds will be going to scientific and technical work than to overhead and related costs. However, the number of contractor organizations still seems quite large and growth in staffing has continued. It remains unclear how successful the DOE will be in eliminating the duplication of effort that seems to have occurred in the past. The Board hopes the changes that have been initiated will have the intended result.

Now, I would like to respond to the Subcommittee's invitation to comment on possible legislative action. The Board views its role in this area to be one of providing technical and scientific information to policy makers as they make important policy decisions — such as the need for legislative changes. Consequently, the Board has not taken a position on the need for legislative action. The Board can of course evaluate the technical and scientific implications of legislative proposals if and when they are introduced.

At the appropriate time, one area the Congress may want to look at, given the new program approach, is the adequacy of funding for very long-term testing, monitoring, and possible retrieval once the waste has been emplaced. As part of our technical and scientific evaluation of the program, the Board has discussed the need to ensure that, in the interest of safety, adequate funding be guaranteed during the full retrievability period both to complete the testing the DOE has indicated will be part of its new program approach and to cover the costs of retrieving the waste for any purpose.

In closing, I would like to repeat that until the specifics of the OCRWM's new program approach have been developed and the Board has an opportunity to review them, we will not be in a position to assess the technical and scientific implications of the PPA. However, we do feel that the current OCRWM leadership should be commended for recognizing the fundamental inconsistency that has existed for the past several years among schedule, money, and the amount of work that needs to be done. Furthermore, there appear to be potential opportunities associated with some aspects of the DOE's proposed program approach; for example, emphasizing site suitability, setting priorities, and reallocating funds to focus on the development of a long-lived waste package and on other important scientific work. An improved interface between the DOE and the NRC also could be a benefit of this midcourse correction to the program.

On the other hand, we would like to caution that the basis for setting priorities should be a waste management systems approach that includes a coherent waste isolation strategy — not just a sorting out of how much testing can be done given time and budget constraints. The Board also will be taking a close look at the greater uncertainty inherent in the PPA's licensing approach and the timetables that have been established to complete important site-characterization activities, including underground excavation and testing and the determination of site suitability.

And finally Mr. Chairman, on behalf of the other Board members and myself, I would like to convey our appreciation for your leadership on issues related to this vital national program as well as your personal interest in and support of the Board's work. You will be missed.

Thank you.