Statement of

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before a hearing of the

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Committee On Science, Space,
and Technology
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Madame Chairman, and members of the subcommittee. I am Dennis Price, chair of the Nuclear Waste Technical Review Board's Panel on Transportation & Systems. On behalf of the Board, I would like to thank you for inviting us to participate in today's hearing. Dr. John Cantlon, the Board's chairman, could not be here today, so I, along with my fellow Board member, Ellis Verink, chair of the Board's Panel on the Engineered Barrier System, will be representing the Board this morning.

Very briefly, our Board was created by Congress in the Nuclear Waste Policy Amendments Act of 1987. Congress asked us to evaluate the scientific and technical activities associated with the DOE's program to manage the disposal of commercial spent fuel and defense high-level waste. Our Board is *not* part of the Department of Energy.

The subcommittee has asked the Board to address the potential for using multipurpose casks for storage and transportation of spent fuel. I would like to begin by talking a little bit about appraoches used in other coutries. In addition, the subcommittee would like to know more about research and development related to continers, which might be used at reactors, to transport the spent fuel, and for use in long-term geologica disposal.

As you know, a few utilities, including the Surrey plant, have on their own expanded pool capacities or developed dry-cask storage capabilities at reactor sites. And, as you know, VEPCO pioneered the use of at-reactor dry storage in this country. However, the Board is concerned that although the Nuclear Regulatory Commission in its Waste Confidence rulemaking proceeding concluded that spent fuel can be safely stored on or off reactor sites for at least 100 years, extended interim storage beyond 1998 has been neither anticipated nor planned for in the U.S. waste management system.

One of the major differences between the U.S. and other programs is that in all other countries the Board has visited interim storage of spent fuel or high-level waste is acknowledged, planned for, and incorporated into overall waste management plans, whereas in this country, plans for interim storage — whether on site or at an MRS — have not yet been integrated into the waste management system. In many of these countries, the generators of the waste are responsible under national law for the safe disposal of nuclear waste. Therefore, the industries in these countries planned for interim storage years ago and have successfully implemented their interim storage plans.

The Board believes the engineered barrier system is an extremely important component of the waste disposal system. In fact, *given appropriate data,* we may be able to predict the isolation performance of engineered barriers with greater confidence than is possible for natural geologic barriers. The Board has consistently advocated a multibarrier, defense-in-depth approach to waste isolation. In particular, we have recommended the use of robust, long-lived waste containers made of materials that have the potential to stand up for thousands of years in a repository environment. A number of the countries we have visited intend for their waste packages to last more than 10,000 years.

Although we are pleased with the DOE’s recent interest in the development of a

multipurpose container, which I will discuss in just a moment, the Board believes that the DOE's history of significantly underfunding necessary research into engineered barriers in general, and more robust waste disposal package designs, in particular, has been short-sighted. It is particularly important to select the appropriate materials when designing the waste disposal container. To validate the selection of materials, short- and long-term tests of the proposed materials will be required. However, citing budget constraints, the DOE has consistently underfunded research in this area. The resulting delays in initiating materials testing could lead to the premature rejection of potentially superior, or more cost-effective, materials that require longer test periods. It also could result in the DOE's inability to demonstrate credibly the long-term performance of these materials during licensing.

In contrast, the emphasis in the U.S. program seems to be on meeting the legislatively established 1998 date for beginning repository operations and accepting spent fuel from the utilities. It has long been clear that a repository will not be operating by that date and even the DOE's present projected 2010 date for repository operations seems highly optimistic. Most other countries visited by the Board have set goals for repository operations for 2020 or later. Furthermore, not even the DOE has much faith that a centralized interim storage facility will be sited and constructed in time to begin accepting spent fuel from the utilities by 1998. However, even if the 1998 and 2010 goals could be met, the Board believes that *substantial* amounts of spent fuel will remain on site at reactors for decades.

As I mentioned before, other countries the Board has visited have recognized the need and planned for extended interim storage. They have developed and *successfully implemented* a variety of options for extended interim storage. As a result, extended storage is not as controversial in those countries as it is in the United States, and is not viewed as a failure of policy.

Let me now turn the testimony to my colleague, Dr. Verink, who will address the engineered barrier system as well as the multipurpose concept.

Thank you Dr. Price.

The Board has for some time been urging the DOE to assess alternatives to its "baseline" design concept for managing the storage, transport, and disposal of spent fuel and high-level waste. The Board has recommended, for example, that the DOE look at the advantages of developing a universal, or multipurpose concept, that could be used for storage, transport, and disposal. The real potential of this concept lies in its ability to greatly reduce handling and, therefore, enhance system safety.

During the last several months, the DOE has been pursuing vigorously a concept they call the "multipurpose canister" or MPC. An MPC is a cylindrical, metallic vessel into which spent fuel would be loaded. The vessel would then be permanently sealed. The MPC would be slipped into thicker overpacks for storage, transportation, and disposal. Storage and transportation overpacks would be reusable.

We support these efforts, particularly because of the potential for improving system safety and because the multipurpose concept is potentially much more robust and long lived than concepts previously pursued by the DOE. However, we strongly encourage the DOE to complete necessary systemwide analyses, including looking at concepts used in other countries, before final design and procurement of any multipurpose container. In addition, to the extent possible, the Board believes the multipurpose container concept should include transport, storage, *and* disposal of the spent fuel — not just transport and storage.

As you are aware, a number of multipurpose container concepts already are being advanced by several entities around the country. I want to emphasize that the Board does *not* endorse any particular design.

In closing, I would like to summarize the major points we have made today. First, substantial amounts of spent fuel will remain in storage for long periods of time. Second, the DOE must place more emphasis on research into engineered barriers. And finally, multipurpose containers have the potential to minimize handling of radioactive spent fuel and to help address long-term storage needs; however, the DOE must analyze carefully how potential multipurpose container designs will affect the entire waste management system before rushing ahead with final design and acquisition.

Thank you. We would be happy to respond to questions.