UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD
2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201-3367

December 13, 1995

The Honorable Hazel O'Leary
Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Secretary O'Leary:

At the Nuclear Waste Technical Review Board's October 1995 meeting, the DOE's Office of Civilian Radioactive Waste Management (OCRWM) reported on some important progress recently made in its Yucca Mountain site-characterization and repository development program. In accordance with our legislative responsibilities, we would like to bring this encouraging news to your attention. As you know, the OCRWM's program has received significant criticism — some warranted, some not — since its inception. Indeed, our Board has made many suggestions for its improvement. Recently, substantial funds were cut from the program's budget while the agenda was expanded conditionally to include the storage of commercial spent fuel.

Specifically, as discussed in the enclosed letter to OCRWM Director, Dr. Daniel Dreyfus, the Board was very pleased to hear about progress in excavating underground at Yucca Mountain; the tunnel boring machine is now advancing at very close to commercial rates. It has reached the level of the proposed repository, and the program is acquiring important data about the suitability of the site. Several of our members and staff returned recently from examining the tunnel. So far, the rock at the repository level looks very good, and no significant water has been found at the repository level. The Board also was very pleased to see recent progress in the development of the waste isolation strategy, which is becoming increasingly well defined and coherent. In combination with recent advances in performance assessment, this strategy should enable the OCRWM to undertake an aggressive delineation of program priorities and allocate available funds more efficiently among the various activities of the groups of scientists and engineers working at Yucca Mountain.

The Board is very encouraged about these developments and believes that real progress has been and continues to be made by the OCRWM both in the conduct and in the management of its investigations of the Yucca Mountain site. In the Board's judgment, the timely completion of these activities is critical to the future success of the DOE's entire high-level radioactive waste management program.

Thank you for your consideration.

Sincerely,

John E Cantlon

John E. Cantlon
Chairman

Enclosure

Telephone: 703-235-4473 Fax: 703-235-4495

UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD
1100 Wilson Boulevard, Suite 910
Arlington, VA 22209

December 13, 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:

Thank you for participating in the Nuclear Waste Technical Review Board's October meeting in Arlington, Virginia. The Board found this meeting to be extremely interesting and informative. The Board is impressed with the progress the Office of Civilian Radioactive Waste Management (OCRWM) has made both in analytic studies and in its underground exploration at Yucca Mountain. The information provided during the course of the two days stimulated a great deal of discussion among Board members during and after the meeting. The Board would like to take this opportunity to provide you with some preliminary feedback from the meeting and our discussions.

It appears that significant progress is being made in developing a clearly defined and coherent waste isolation strategy. As you know, the Board believes that this kind of strategy is needed to help establish and maintain program priorities. Now that program funding is being reduced, having such a strategy is more important than ever. Some critical assumptions underlying the draft waste isolation strategy do require further examination, especially the amount and character of future percolation flux, the duration of low relative humidity in the vicinity of the waste package, and the amount and duration of dilution in the saturated zone. Once completed, the results may dictate further modification of the strategy and of the program's priorities and study plans.

The latest round of total system performance assessment (TSPA-95) represents a major improvement over its 1993 iteration. The increased level of detail in modeling the near-field thermo-hydrological environment, waste package degradation, engineered barriers, and other aspects of repository performance provides new insights that should enable the OCRWM to decide what activities to emphasize during the coming months. The TSPA-95 also should be useful when explaining repository development issues and activities to stakeholder groups. The Board hopes the OCRWM uses the TSPA-95 aggressively to focus scarce resources on those activities that are of the highest priority.

The Board has long believed that engineered barriers are an important component of a multi-barrier repository system. The Board is pleased to see that

Telephone: 703-235-4473 Fax: 703-235-4495

engineered barriers are playing a more significant role in the draft waste isolation strategy and that TSPA-95 included preliminary evaluations of the performance of some potential engineered barriers, including backfill, cathodic protection of waste packages, and capillary (flow diversion) barriers. The Board generally believes that the longer the waste can be contained, or significant releases delayed, the better. Waste packages can probably be designed to provide thousands of years of containment; other engineered and natural barriers may add several thousand to hundreds of thousands of years of delay at a suitable repository site. Therefore, the DOE should encourage innovative thinking in the design and possible use of other engineered barriers, such as suitable waste package fillers.

The Board is pleased to hear that the performance of the tunnel boring machine (TBM) continues to improve, primarily due to favorable geology, a more realistic definition of what constitutes safe tunnel support, increased crew experience, and improved management The TBM is now well into the proposed repositoiy horizon, and, with continuing favorable geology and effective use of the board of expert consultants, TBM operations should continue at what are close to commercial rates. Underground excavation has already revealed features — some anticipated, others not — that contribute to our understanding of the Yucca Mountain geology. This level of understanding could not have been determined from surface-based investigations alone. The Board continues to believe that more underground exploration of the repositoiy block is needed.

The Board recognizes that these are times of great apprehension for the program. Reduced funding and temporarily uncertain regulatory criteria dictate that the DOE carefully evaluate ongoing and proposed site-characterization activities at Yucca Mountain. The program must remain flexible yet focus on those activities that can be identified now as being high priority; contingency plans should be developed to address those activities that await regulatory clarification and congressional action. Finally, the program must continue to improve its organizational and managerial efficiency to carry out all of the above in a timely manner, thus strengthening the confidence of Congress and the stakeholders.

Once again, thank you for supporting an excellent meeting.

Sincerely,

John E Cantlon

John E. Cantlon
Chairman