
Nuclear Waste Technical Review Board

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February 24, 1994

The Honorable Thomas S. Foley
Speaker of the House
United States House of Representatives
Washington, D.C. 20515-6501

The Honorable Robert C. Byrd
President Pro Tempore
United States Senate
Washington, D.C. 20510-1902

The Honorable Hazel R. O'Leary
Secretary
U.S. Department of Energy
Washington, D.C. 20585

The Nuclear Waste Technical Review Board issued its *Special Report to Congress and the Secretary of Energy* almost one year ago. Since then, the Department of Energy's (DOE) civilian radioactive waste management program has made progress in many areas. After several delays, underground excavation of the exploratory facility at Yucca Mountain has begun, and the management and operating (M&O) contractor is beginning the integration of the entire civilian radioactive waste management system — including storage, transportation, and disposal. In addition, the Board has been encouraged by Secretary O'Leary's recent efforts to improve the program. Specifically, she has created the position of chief scientist to help integrate important scientific and technical activities at the Yucca Mountain site; she is proceeding with a financial and management review of the Yucca Mountain project in Nevada; and, through a recent initiative, she has taken steps toward broadening stakeholder participation in the civilian radioactive waste management program. Finally, she moved swiftly to find a permanent director for the program. The Secretary's choice for director of the Office of Civilian Radioactive Waste Management (OCRWM), Dr. Daniel Dreyfus, was confirmed by Congress on October 7, 1993.

At the Board's January 1994 meeting in Washington, Dr. Dreyfus made a presentation to the Board on behalf of Secretary O'Leary. During his remarks, he outlined current program goals and indicated he would soon be inviting comments on how to improve the current focus of site-characterization efforts at Yucca Mountain and how to shape the program to accommodate future budget realities. It is apparent that within only a short time, the director and his staff have succeeded in recognizing many of the key issues that need addressing in the coming months. In an effort to provide timely and constructive comments on important programmatic issues, the Board has decided to submit this short letter report, which contains three recommendations.

Summary of the recommendations

At the January meeting, Dr. Dreyfus listed several important short-term goals the OCRWM program had set for itself. These include "returning the emphasis" of the repository program to science and site characterization, "institutionalizing stakeholder interaction," and proposing a new funding mechanism to increase monies going to the OCRWM program; Dr. Dreyfus said that, once the future budget profile of the program had been determined, program activities would be "recast to use those resources efficiently." In light of these program goals, the Board would like to make the following recommendations.

1. The Board repeats the recommendation it made in its *Special Report* in March 1993: *an independent review of the OCRWM's management and organizational structure should be initiated as soon as possible*. The problems created by OCRWM's large and unwieldy organizational structure, as well as by previous management decisions, should be addressed sooner, rather than later. The Board believes that this review can and should be undertaken without slowing the momentum of important site-characterization activities currently under way at Yucca Mountain.

Now that the Secretary has requested the creation of a special fund to give the OCRWM increased access to revenues coming into the Nuclear Waste Fund, an independent review is needed more than ever. This is because relatively too little funding has been going to the direct costs of the scientific research and engineering activities essential to characterizing the Yucca Mountain site. Based on its four-year review of the program, the Board believes that *simply increasing the program's funding will not ensure that adequate funds will be allocated to the most important site-characterization activities or to other critical research*. Simply increasing funding also will not ensure that the program will meet its current schedule deadlines. The Board believes that a timely, independent review of the OCRWM's management and organizational structure will provide an excellent basis for the needed reshaping of the program, regardless of future funding scenarios.

2. The Board believes that it is vital to maintain the momentum of current site-characterization efforts and recommends that, *whether the program budget remains level or is increased, program management should ensure sufficient and reliable funding for site characterization and performance assessment, which is critical for integrating the program*. During the past three years, the OCRWM has cited a lack of funds as the reason for postponing or slowing critical site-characterization activities, including underground excavation and surface-based testing, as well as research in other important areas. At the same time, however, the number of people working on the program has continued to grow. Program managers need to place a greater emphasis on a number of critical activities, including underground excavation, surface-based testing and mapping, thermal testing, and waste package development. At the very least, sufficient monies should be guaranteed for those activities that will facilitate the identification as soon as possible of any obvious features that would disqualify the site.

3. The Board recommends that the OCRWM *build on the Secretary's new public involvement initiative by expanding current efforts to integrate the views of the various stakeholders into the civilian radioactive waste management program during the decision-making process — not afterward.* Because both the lay and the scientific communities have important roles to play in the evolution of this program, the Board hopes that the OCRWM's recent stakeholder workshops are only the first in a series of constructive interactions with OCRWM stakeholders. Furthermore, the Board encourages the DOE to establish a *long-term framework* for constructive interaction with OCRWM stakeholders on important high-level waste management issues.

The following discusses these three recommendations in more detail.

Recommendation 1: Independent Program Review Needed Now More Than Ever

As it did in its March 1993 *Special Report*, the Board recommends that *an independent review of the entire OCRWM's management and organizational structure be undertaken as soon as possible.*¹ The Board believes that the large number of program personnel, the many organizations involved in the U.S. program, and the diffuse nature of its organizational structure will continue to create very difficult challenges for program managers and adversely affect the technical program.

The U.S. civilian radioactive waste management program is proving difficult to manage. It currently employs approximately 2,790 people spread among a dozen major and almost two-dozen minor contractors, several national laboratories, various government agencies, and others.² The program's organizational structure is multilayered, program entities are geographically dispersed, and responsibility for decision making is spread among too many managers. The result is a lack of overall program integration. This contributes to major inefficiencies, which, in turn, affect every aspect of the technical and scientific program and hinder the integration of the program's different scientific and engineering components. Finally, OCRWM management historically has devoted such significant resources to overhead and infrastructure that relatively limited funding has remained for important science and site-characterization activities.³

¹*Others (U.S. Representatives Philip Sharp and Richard Lehman in August 1993, and the General Accounting Office in May 1993) have made similar recommendations.*

²*January 27, 1994. Memo to the Board from the DOE's Office of External Relations, Office of Civilian Radioactive Waste Management. The numbers, which include contractors and approximately 250 federal DOE employees, reflect the number of people working on the OCRWM program as of the first quarter of fiscal year 1994.*

³*NWTRB. 1993. Special Report to Congress and the Secretary of Energy. March 1993. Or, most recently, for example, at the Board's July 1993 meeting the OCRWM attributed its under use of outside expert judgment in a performance assessment study to a lack of sufficient funds.*

In the past, the Board has questioned the technical basis for a number of management decisions. For example, at the Yucca Mountain site-characterization project office in Nevada, decisions often do not reflect standard practice in the underground construction industry. The cost-plus award-fee contracts being used encourage neither competition nor innovation.⁴ The Board also believes that the OCRWM is overdesigning the underground exploratory studies facility planned for Yucca Mountain. The excavation of the exploratory facility could be accomplished more quickly and at less cost if the surface and subsurface support facilities and utilities were reduced in scale and simplified.⁵ The Board believes that decisions like these could continue to divert funds from important site-characterization and related research activities, no matter what the OCRWM's budget.⁶

Recently, the Secretary asked Congress to create a "special funding mechanism" that would provide the OCRWM with increased access to monies flowing into the Nuclear Waste Fund.⁷ Given this request, the review recommended by the Board in its March 1993 *Special Report* takes on even greater significance. Although the Board believes that the OCRWM must direct more funding to site characterization, *simply increasing OCRWM's budget will not ensure that adequate funds will be allocated to the most important site-characterization activities or to other critical research and testing; nor will it ensure that the current program schedule is met.*⁸ And simply increasing the program's budget will not solve the OCRWM's significant organizational and management problems, which continue to affect the technical program.

The Board believes that, in addition to helping address the OCRWM's management and organizational problems, an independent management review of the entire OCRWM program would provide program managers with a framework that would allow, for example, (1) better integration of the science and engineering in the program,

⁴Questions about the efficiency of the DOE's award-fee contracts also have been raised by DOE Assistant Secretary Thomas P. Grumbly. (See *Energy Daily*, Monday, July 19, 1993.)

⁵NWTRB. 1993. *Underground Exploration and Testing at Yucca Mountain. Report to Congress and the Secretary of Energy. October 1993.* (See discussion beginning page 13.)

⁶The Board hopes that the constructive organizational changes being made at the Yucca Mountain project in tandem with the financial and management review of the Yucca Mountain project announced by the Secretary on January 27, 1994, will address some of these problems.

⁷When asked by the Office of Management and Budget to comment on the funding mechanism, the Board chose to defer comment to those more competent in such matters.

⁸A number of important activities must take place before repository operations, currently scheduled for 2010, can begin. For example, repository construction should begin around 2001. But before that happens, for example, the DOE must (1) complete the underground exploratory facility (the main portal-to-portal tunnel is not scheduled to begin before August 1994); (2) initiate and secure data from long-term in-situ thermal testing, which is not scheduled to begin until 1997; (3) submit a final environmental impact statement.

(2) more informed judgments about opportunities for reducing the duplication of efforts by multiple contractors, and (3) a restructuring of the program while maintaining the continuity of scientific and technical activities.

Unfortunately, such a broad-based review of the entire OCRWM has neither been initiated, nor, to the best of our knowledge, been planned. As already mentioned, the Secretary has announced a financial and management review of the Yucca Mountain project, and this limited review could play an important initial role in an overall review of the OCRWM program. However, neither this limited review, nor the recently completed selective compilation of comments by parties interested in the repository development program,⁹ would substitute for the kind of independent review called for last year in the Board's *Special Report*.

The Board suggests that the Secretary of Energy appoint a small, independent group of internationally recognized experts with extensive experience in managing large, complex programs and in system acquisition to conduct this review. Although necessary, knowledge in the nuclear waste management field alone would be insufficient to carry out the review. Given these kinds of experts, such a review should not take long, nor require a large staff. The review can and should be conducted *concurrently* with ongoing site-characterization activities.

Recommendation 2: Maintain the Momentum of Site-Characterization Activities

In the past, the Board questioned continual delays in site characterization. Now that excavation activities at the Yucca Mountain site have finally begun, it is crucial that the momentum of these activities be maintained.

In previous reports and in its *Special Report*, the Board expressed concern about the OCRWM's decision to devote such significant resources to overhead and infrastructure that relatively limited funding remains for site-characterization activities. The OCRWM has cited a lack of funds as the reason for postponing or slowing some critical activities, such as underground excavation and surface-based drilling and testing. The Board also recommended in several reports against reducing the funding to support development of a long-lived waste package.¹⁰ While these important scientific and engineering activities were being either

⁹Thurber, James A. *Draft Report on Published Works and Comments Regarding the Office of Civilian Radioactive Waste Management Program, 1989-1993. December 13, 1993.*

¹⁰In its *Fourth Report (1991)*, the Board recommended that engineered barrier development and testing be funded continuously and at a level sufficient to evaluate its contribution to long-term predictions of repository behavior. In its response to that recommendation (in the *Fifth Report*) the DOE indicated its agreement with this recommendation but explained that budget constraints were responsible for the constricted development of engineered barriers. The Board was recently encouraged to see small increases in funding going to research in this area. Waste package design is a critical area, especially in light of recent emphasis by the DOE on the development of a multipurpose canister.

postponed or slowed, however, the number of contract employees working on the program continued to grow. For example, since July 1991 the number of contract employees working full time on the program has increased 34 percent to a total of 2,540 in December 1993.¹¹ In addition, substantial resources are being committed to the construction of a complex underground exploratory facility with a very large main tunnel, a large and complex core test area, and surface and subsurface facilities and utilities that exceed the actual requirements of the current excavation plan.¹²

Given these kinds of management decisions, the Board believes that, no matter what OCRWM's future budget, delays in the scientific investigations at the site easily could continue. For example, if underground excavation is delayed or slowed (a real possibility) during fiscal year 1995, the underground exploration needed for identifying any obvious features that could disqualify the site also will be delayed. And initiation of the underground in-situ thermal testing needed to support decisions about repository and waste package design and about repository licensing likewise will be delayed. This is critical because in-situ thermal testing may take a decade or more to complete.¹³

To ensure that the momentum of activities currently under way at Yucca Mountain continues — *whether the budget remains level or is increased* — *funds must be allocated in such a way as to ensure sufficient and reliable support for site-characterization and iterative performance assessment, which is essential for focusing the technical program.* Program managers need to place a greater emphasis on a number of critical activities, including underground excavation, surface-based testing and mapping, thermal testing, and waste package development. Determining whether or not Yucca Mountain is suitable for locating a permanent high-level waste repository is probably the program's most important short-term goal, and its high priority should be reflected in the allocation of the program's funds.

Recommendation 3: Expand Efforts to Integrate Stakeholder Views

The continuing involvement of stakeholders and other members of the interested public is critical to the progress of the OCRWM's program. The Board has seen — in the U.S. program and in programs in the seven other countries it has visited — that public perceptions about the potential risks associated with nuclear power and the waste it generates must be addressed. Without substantial public involvement, the goal of siting a permanent repository could be even more difficult to achieve, no matter what the sophistication and depth of the technical and scientific program.

¹¹*In July 1991, there were 1,890 contract employees working on the program, in addition to approximately 250 federal DOE people. These numbers are available from the OCRWM on a quarterly basis.*

¹²*NWTRB. 1993. Underground Exploration and Testing at Yucca Mountain. A Report to Congress and the Secretary of Energy. October 1993.*

¹³*NWTRB. 1993. Special Report to Congress and the Secretary of Energy. March 1993.*

At the January Board meeting, Dr. Dreyfus was asked to comment on the findings of a task force report commissioned by the previous Secretary of Energy, which determined that a "widespread lack of trust in the DOE" exists, "specifically in the waste management office's activities."¹⁴ The report suggests that some of this distrust stems from the DOE's historical exclusion of potential stakeholders from the decision-making process. Dr. Dreyfus responded that one of the Secretary's major goals is to create an environment of openness and interaction with program stakeholders. Indeed, the Secretary already has initiated a new public involvement policy.¹⁵

The Board supports the DOE's efforts to broaden the public's participation in the decision-making process and *recommends that the OCRWM build on the Secretary's initiative by expanding current efforts to integrate the views of the various stakeholders into the civilian radioactive waste management program as it evolves.* The Board believes the views of the interested public must be integrated into the program *while key decisions are being made — not afterward.* Both the lay and the scientific communities have important roles to play in the evolution of this program. We hope that recent stakeholder workshops¹⁶ are only the beginning of an ongoing series of constructive OCRWM-stakeholder interactions. The Board also encourages the Secretary to consider establishing a long-term framework for constructive interaction on high-level waste issues with OCRWM stakeholders similar to the Environmental Protection Agency's recently completed *year-long* superfund study.¹⁷

In conclusion, the Board recognizes that OCRWM's new program managers are facing a wide variety of significant challenges. The Board also understands that the recommendations it is making will not be easily implemented; there are no quick fixes for this complex program. With that said, however, the Board strongly believes that, no matter what future funding trends may be, these recommendations should be implemented to achieve an efficient and cost-effective program. We hope that the

¹⁴*Earning Public Trust and Confidence: Requisites for Managing Radioactive Waste. 1993. Final Report of the Secretary of Energy Advisory Board Task Force on Radioactive Waste Management. November 1993.*

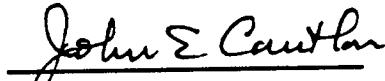
¹⁵*On December 17, 1993, the Department of Energy released for public comment a draft of its new public involvement policy.*

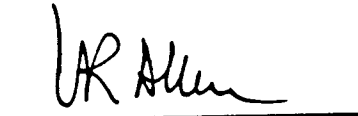
¹⁶*The OCRWM has held four stakeholder workshops in recent months on general issues, the multipurpose canister, and on the waste management system.*

¹⁷*In June 1993, the DOE participated in a Keystone-led effort to hammer out consensus on high-level waste. Unfortunately, the effort died after the first meeting. Recently, a similar effort was undertaken by the EPA to look at ways of revamping procedures to clean up hazardous waste dumps across the United States. The results of this year-long study of the superfund program by environmentalists, industry leaders, Indian tribal leaders, and others included consensus on a number of issues and several wide-ranging recommendations for program improvement.*

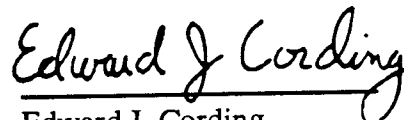
Congress and the Secretary of Energy will consider our recommendations seriously as important decisions are being made about the funding structure of this vital national program.

Sincerely,

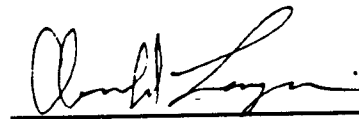

John E. Cantlon, Chairman

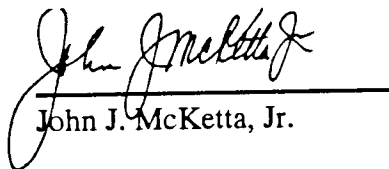

Clarence R. Allen

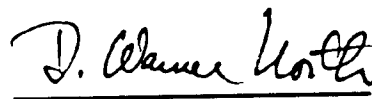

Garry D. Brewer

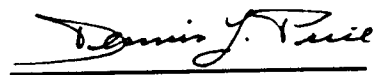

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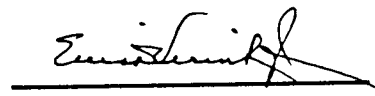

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