



Department of Energy

Washington, DC 20585

QA: NA

February 1, 2005

Dr. B. John Garrick
Chairman
U.S. Nuclear Waste Technical Review Board
2300 Clarendon Boulevard, Suite 1300
Arlington, VA 22201-3367

Dear Dr. Garrick:

Thank you for your letter of December 1, 2004, providing the Nuclear Waste Technical Review Board's (Board) comments on the information presented by the U.S. Department of Energy's (Department) Office of Civilian Radioactive Waste Management (OCRWM) at the October 13 and 14, 2004, meeting of the Board's Waste Management System panel. We appreciated the opportunity to inform the Board about the progress in the transportation portion of the OCRWM Program as discussed by members of my staff from the Office of National Transportation. Our responses to the Board's views and comments are summarized in the enclosure to this letter.

The Department continues to benefit from the constructive views of the Board. We look forward to further dialogue on technical issues pertinent to transportation and the repository program at future Board meetings.

Sincerely,

Margaret S.Y. Chu, Ph.D.
Director
Office of Civilian Radioactive
Waste Management

Enclosure

NUCLEAR WASTE
TECHNICAL REVIEW BOARD

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**U.S. DEPARTMENT OF ENERGY (DOE) RESPONSES TO THE
DECEMBER 1, 2004, LETTER FROM THE NUCLEAR WASTE
TECHNICAL REVIEW BOARD (BOARD)**

TRANSPORTATION PLANNING

COMMENT

There is no overarching implementation organization in the Office of Civilian Radioactive Waste Management (OCRWM) that can develop a safe, secure, and efficient transportation system.

RESPONSE

The Office of National Transportation (ONT) is responsible for developing, building, operating, and managing a national transportation system to ship spent nuclear fuel (SNF) and high-level radioactive waste (HLW) in a safe, secure, and efficient manner to a repository and, as such, is the overarching implementation organization within OCRWM. ONT manages two projects, National Transportation and Nevada Transportation. The Nevada Transportation Project is responsible for developing the transportation infrastructure in Nevada, primarily a railroad for connecting the repository to existing mainline track in the State. The National Transportation Project is organized into four subprojects: (1) Cask Acquisitions, (2) Rolling Stock Acquisitions, (3) Operations, and (4) Institutional. ONT has the responsibility for integrating these projects with the Office of Repository Development, with the Waste Acceptance Office, and with a broad range of stakeholders to ensure the transportation system is safe, secure, and efficient. In addition to ONT's integration responsibilities, OCRWM also has an Office of Systems Analysis and Strategy Development which is responsible for organizational integration as part of its strategic planning charter.

COMMENT

Specific logistical plans need to be developed that identify what entity is responsible for each system component and the key interactions required of each involved entity.

RESPONSE

We agree. ONT is building the foundation for transportation operations. Project plans are being developed that show responsibilities for the various transportation project elements and the interfaces required for each activity. A conduct of operations plan and specific campaign plans will be developed after key decisions are made regarding policy and technical issues such as the use of dedicated trains, and cask and rail car acquisition. While these plans are not complete at this point in the program, ONT is aggressively

putting the foundation in place to develop detailed plans for shipping, taking into account systems analyses and logistical modeling results. A logistics model is being developed at Sandia National Laboratories specifically for the OCRWM transportation program. Development of detailed shipment logistics are also tied to funding and to progress for the repository as a whole. The OCRWM Program Plan (an internal management document) spells out roles and responsibilities for each element of the organization.

COMMENT

DOE needs to focus its attention on the transportation options within Nevada for both rail and truck. In particular, contingency plans need to be developed for higher levels of truck use in case a rail spur is not built or delayed beyond the initiation of the shipping campaign.

RESPONSE

The Department notes the recommendation to develop contingency plans in the event of delays. We are investigating various contingencies at this time; however, our transportation planning already envisions a mix of transport modes as part of the system due to physical and operational constraints at reactor sites. Logistical planning will constantly be adjusted to reflect the status of the program, decisions by States to designate alternative highway routes, and the status of shipping sites. Operational decisions will not be finalized until several years before the first shipment.

COMMENT

Communication between DOE and the stakeholders could be improved to ensure the public understands technical aspects of the program, particularly in the context of risk perception.

RESPONSE

We do have a robust and proactive institutional program that is working with stakeholders to develop the transportation system, both for the Nevada rail corridor and for national transportation activities. We appreciate and agree about the need for the public to understand this program and have fully funded the institutional project to support the public information and public involvement aspects of the transportation program. Our approach has been first to work with various groups we believe are the correct ones to provide unbiased information to their constituents. An example of working with key stakeholders is the coordination in place with four State regional organizations: the Midwestern Regional and Northeastern Regional Offices of the Council of State Governments, the Southern States Energy Board and the Western Interstate Energy Board. These organizations and their State committee members are working with ONT to develop the plans for Section 180(c) policy implementation, public information and outreach plans, and coordination with local officials, routing determinations, and other similar transportation issues.

SECURITY AND EMERGENCY RESPONSE PLANNING

COMMENT

Risk assessment results should be merged into an integrated, all-hazards risk management approach that fully considers both safety and security threats.

RESPONSE

DOE appreciates the Board's concern that safety and security should be complimentary activities and will take into consideration the all-hazards risk management approach as it develops the transportation system. Traditional risk analysis techniques cannot be applied directly to terrorist acts since the probability of an attack cannot be ascertained; therefore, we are using a systematic approach that considers the consequences of a variety of threat scenarios and assesses threat mitigation options. In much the same way, we are taking actions to mitigate the consequences of accidents by using Nuclear Regulatory Commission (NRC) certified casks and the highest quality rail cars and by supporting emergency preparedness training. In addition, we are coordinating with the DOE's Office of Security and Safety Performance, the Departments of Homeland Security and Transportation, and industry to establish the appropriate transportation system to ensure both security and safety for OCRWM shipments.

COMMENT

DOE needs to define what constitutes a minimum acceptable level of emergency response along each segment of each transport route and needs to develop a method for verifying that such capability exists.

RESPONSE

Basic emergency preparedness is in place in States and local communities to respond to all hazardous materials transportation accidents, including those that have a much higher risk of immediate death or injury than do SNF or HLW. OCRWM will address the incremental level of preparedness associated with the risk of our shipments by providing the funding and technical support envisioned by Congress for State and Tribal governments. This support includes funding for planning and training activities under Section 180(c) of the Nuclear Waste Policy Act (NWPA) and technical assistance for training and exercises associated with emergency preparedness and transportation operational readiness.

DOE has articulated in prior 180(c) policy documents that the minimum level of response is that of awareness-level understanding for the shipments made under the NWPA. To achieve awareness-level capability, the State and Tribal governments along the routes will be provided funding and technical assistance such as train-the-trainer and exercise support with participation by DOE. Validation of preparedness capabilities would occur through planned readiness reviews and exercise programs, modeled after the Foreign

Research Reactor shipping program experience cited by the Board. In addition, we believe that it is important for the Board to recognize the role the local governments have in ascertaining whether a responder is prepared for the kinds of risks posed by hazardous shipments through their districts. The employer certifies the readiness of its employees. In addition, State and Tribal governments are responsible for maintaining emergency preparedness plans and coordinating training with local officials so that an integrated response system is in place.

COMMENT

Also important is understanding of the general expectations of security provisions, safe havens, notifications, escorts, and emergency personnel, including first responders.

RESPONSE

DOE has promulgated guidance for all shipping programs through the *Radioactive Materials Transportation Practices Manual*, DOE Order 460.2 M. OCRWM supported the development of the Manual, which outlines the Department's guidance on procedures to be followed by any DOE shipper. The Department's actions with regard to notifications, safe havens (which are for emergencies as much as for security), escorts, and emergency preparedness are articulated in the Manual. In addition, stakeholders reviewed the Manual during its development. OCRWM expects to update the practices applicable to its shipments starting in 2006 and will use a process similar to that used to develop the Manual to obtain input from our key stakeholders using the Transportation External Coordination (TEC) Working Group and the State regional groups for review of any additions or changes.

OCRWM will develop Transportation Campaign Plans to describe the roles and responsibilities for conducting specific shipments and will outline the steps and coordination needed for those shipments. The Transportation Plans will be developed prior to actual shipments and will involve State and Tribal officials, other appropriate Federal agencies, and the carriers in the planning process.

TRANSPORTATION RISK ASSESSMENT

COMMENT

DOE's approach to transportation risk assessment has been largely one of applying deterministic models (i.e., RADTRAN).

RESPONSE

RADTRAN 5, including the Latin Hypercube Sampling (LHS), was thoroughly tested and validated before 1999. RADTRAN is a probabilistic model rather than a deterministic one. The ability to distribute input as a complementary cumulative distribution function has been available to all RADTRAN users since 1998. Results

using this option have been published, notably in NUREG/CR-6672. The LHS option has not been available outside Sandia since January 2004; this is a temporary situation resulting from the shutdown of TRANSNET and the porting of RADTRAN, in 2003, from the Sandia server to a downloadable executable form. The LHS option is still available internally at Sandia, and we will continue to perform LHS analyses on request until LHS becomes available as a download (probably by early 2006). Even when RADTRAN uses single values of input parameters, probability is incorporated into the output, which reflects the risk triplet. This is particularly evident in the accident analysis: RADTRAN multiplies the conditional probability of each accident scenario by the appropriate dose, sums the products, and then multiplies by the estimated accident frequency. The result is reported as a "dose risk." Since the probability of incident-free transportation is negligibly different from unity, results are reported as doses rather than "dose risks."

COMMENT

The Board would like to be kept informed on the status of the NRC Package Performance Study.

RESPONSE

DOE will be pleased to share information it has relative to the Package Performance Study with the Board; however, conduct of the Package Performance Study is within the purview of the NRC. We have and will continue to support NRC's study activities. DOE cannot speak for the status of NRC activities and recommends that the Board contact the NRC directly relative to any issue pertinent to this request.

ROUTE SELECTION

COMMENT

DOE needs to ensure that the technical issues involved in route selection are identified and that sound methods for addressing issues are developed and applied.

RESPONSE

We agree with the Board that sound methods to address routing issues be developed and applied to the program. In this regard, DOE is using a decision model tool that Sandia National Laboratories has developed as part of the routing criteria development work underway with State regional groups and the TEC Working Group. In addition, ONT provided training on RADTRAN, TRAGIS, and the decision model for State officials in January. These analytical tools are being provided to State and Tribal decision makers and staff for their use as we work together to develop regional suites of routes for the OCRWM shipments. The next TEC meeting will have several smaller workshops to allow participants to become more familiar with the routing decision model.

COMMENT

Tribal groups may not be adequately represented in the deliberations establishing routing criteria and recommending preferred routes.

RESPONSE

DOE is sensitive to the needs of Tribal governments and it is our intention to work with Native American Tribal governments on a government-to-government basis to identify their preference for consultation and coordination. We expect to initiate visits to Tribes potentially impacted by future shipments to Yucca Mountain to discuss issues regarding emergency preparedness, information exchange, and coordination with their technical staff or leadership.

In addition, the TEC Working Group Tribal Issues Topic Group is an important resource for developing approaches to interacting with Tribes and discussing issues such as routing, emergency planning and funding, and security. Established in 1998, the Topic Group addresses government-to-government consultation between DOE and Tribes affected by its transportation activities, and has active tribal participation, which we expect to expand.

PROGRAM INTEGRATION**COMMENT**

The DOE presentations did not demonstrate the degree of program integration needed to ensure the transportation system will operate successfully. DOE needs to plan for and be able to demonstrate harmonization of cask design, fleet acquisition, waste acceptance and operational practice, and other activities that must be carried out at reactor sites, during shipping, and at the repository. The Board looks forward to further discussion of program integration in future meetings.

RESPONSE

We will be happy to present the status of program integration activities at the next Board meeting. We look forward to further discussion. We believe that the systems are fully integrated because of ongoing work with the repository on cask acquisition, rail interface, and cask handling requirements for repository site operations. Cask integration meetings are held regularly to integrate the repository's operating needs with the design of transportation casks. Integration of aging cask designs with transportation cask designs is another area of integration between transportation and the repository design effort. ONT is also working with OCRWM's waste acceptance organization on transportation interfaces with the utilities. These interfaces address facility capabilities that affect cask and rolling stock specifications and operating plans.