



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
WASHINGTON, DC 20555 - 0001

ACNWR-0221

June 28, 2005

The Honorable Nils J. Diaz  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: DEPARTMENT OF ENERGY PLANS FOR TRANSPORTING SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Dear Chairman Diaz:

At its 159<sup>th</sup> meeting on April 18-19, 2005, the Advisory Committee on Nuclear Waste (ACNW) heard a presentation by Gary Lanthrum, Director of the Office of National Transportation (ONT) of the Department of Energy (DOE).

**Summary of the ONT Presentation**

ONT will build and operate a system for transporting spent nuclear fuel (SNF) and high-level radioactive waste (HLW) to a repository at Yucca Mountain, Nevada. ONT has been organized around four project areas:

- Institutional
- Operational Infrastructure
- Fleet Acquisition
- Rail Through Nevada

The Institutional Project will collaborate with stakeholders to refine the transportation system as it is developed. A key effort will be to develop policy and procedures for awarding grants under Section 180(c) of the Nuclear Waste Policy Act to assist State, Tribal, and local emergency response personnel in preparing for repository shipments and to develop information for the public and interested stakeholders.

The Operational Infrastructure Project will define, develop, implement, and demonstrate the operational infrastructure needed to support waste transportation from the utility and DOE locations where the SNF and HLW are currently stored to the proposed Yucca Mountain repository. The transportation infrastructure is intended to ensure optimal transportation from the origin sites to Yucca Mountain, but optimization depends on other factors: maximal utilization of existing casks and other facilities, as few shipments as possible, acceptable and safe routes, and rapid transportation from each origin site. Optimization is complicated by the uncertainty about when fuel of various types will be shipped.

The Fleet Acquisition Project will define the approach to purchasing transportation casks and rolling stock to support transportation to the repository. The ONT's goal is to procure the minimum suite of casks and undertake as few certifications as possible. Existing casks will be used as much as possible, but DOE has found that the existing casks will fill only about 30% of the need.

A rail line will be built in Nevada to connect the repository to an existing main rail line. ONT is preparing a rail alignment environmental impact statement (EIS) in accordance with the National Environmental Policy Act. DOE is evaluating the environmental inputs of a 318-to-344-mile-long corridor beginning in Caliente, Nevada. As a result of the scoping hearings on this EIS and the ensuing approximately 4000 comments to DOE, several additional routes are being considered for the proposed rail line.

DOE is also asking to be allowed to take credit for fuel burnup; i.e., to recognize that relatively high-burnup fuel has significantly less fissile content, and significantly more radionuclides that can poison the fission reaction than fresh fuel or low-burnup fuel. ONT said that there is little data on this topic in the U. S. The French have developed a considerable database and are working with the DOE. The chance of a criticality is significantly lowered in high-burnup fuel, and if this credit is allowed, the amount of SNF in a shipment can be increased. Without burnup credit, the space in some transportation casks could not be utilized fully. As the amount of SNF per shipment increases, the number of shipments needed decreases.

#### ACNW Observations

- The entire SNF transport system should be optimized from storage at the site of origin through transport, receipt, repackaging and emplacement in the drift. The transportation plan should be integrated with the strategy and plan for emplacing the waste in the repository.
- The DOE plan to try to obtain burnup credit — credit for reducing the risk of criticality in high burnup fuel — appears to be a wise move toward more realism in analysis of transportation of SNF and toward increased transportation efficiency.

#### ACNW Recommendation

NRC staff should consider allowing realistic burnup credit for cask certification.

Sincerely,

*/RA/*

Michael T. Ryan  
Chairman

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