

STATEMENT SUBMITTED  
BY THE  
UNITED STATES NUCLEAR REGULATORY COMMISSION  
  
TO THE  
SUBCOMMITTEES ON HIGHWAYS AND TRANSIT AND RAILROADS  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
UNITED STATES HOUSE OF REPRESENTATIVES  
  
CONCERNING  
TRANSPORTATION OF SPENT FUEL TO POTENTIAL GEOLOGICAL  
REPOSITORY AT YUCCA MOUNTAIN  
  
PRESENTED BY  
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Messrs. Chairmen, members of the Subcommittees, I am pleased to join you to testify on behalf of the Nuclear Regulatory Commission (NRC) concerning the NRC's regulatory oversight role in the U.S. program for transportation of spent nuclear fuel to a proposed permanent geological repository at Yucca Mountain, Nevada.

The Commission believes that a permanent geologic repository can provide the appropriate means for the United States to manage spent nuclear fuel and other high-level radioactive waste in a safe manner. We also believe that public health and safety, the environment, and the common defense and security can be protected by deep underground disposal of these wastes. Similarly, we believe that spent nuclear fuel can be safely and securely transported from its current locations to a permanent geologic repository. However, the Commission takes no position on whether such a repository should be located at Yucca Mountain, Nevada. The Commission's views on that question must be shaped by the results of the Congressionally mandated licensing process.

Spent fuel has been safely and securely shipped within the U.S. and around the world for more than 25 years. Spent fuel is required to be shipped in extremely robust transportation packages that are designed and fabricated to withstand severe accident conditions. These packages are known as "Type B" transportation packages. The hypothetical accident conditions and consequent design standards for Type B packages have been established under the auspices of the International Atomic Energy Agency (IAEA) by international experts, including the U.S. representatives. The standards for Type B transportation packages have been in existence for more than 25 years and their adequacy has been repeatedly demonstrated during worldwide shipment of Type B packages.

In the U.S., shipments of spent fuel have been safely and securely made by both NRC licensees and the U.S. Department of Energy (DOE). These shipments included shipments by NRC licensees between power reactor facilities and other facilities. Over 1300 spent fuel shipments have been safely made in NRC-approved packages over the last 20 years under the NRC's and Department of Transportation's (DOT) regulatory authority — a remarkable safety record. No failures of the spent fuel transportation packages have occurred during these shipments, which means there have been no radiological releases or injuries to workers or the public who live and work along the shipment routes. Additionally, the NRC has also been involved in DOE's efforts to return foreign research-reactor spent fuel to the U.S. For example, NRC has approved packages used by DOE.

### **Regulatory Framework**

As you know, Congress provided in the Hazardous Materials Transportation Uniform Safety Act of 1990 that the DOT would regulate the safe transportation of hazardous materials in intrastate, interstate, and foreign commerce. Radioactive material is one of the nine classes of hazardous materials whose transportation is regulated by DOT. Separately, Congress provided in the Atomic Energy Act of 1954 (AEA) and the Energy Reorganization Act of 1974 that the NRC would regulate the transfer, delivery, or acquiring of special nuclear material and byproduct materials. Additionally, Congress provided in the Nuclear Waste Policy Act of 1982 (NWPA), as amended, that DOE would use NRC-approved package designs to transport spent nuclear fuel to a permanent geologic repository. Congress also provided that DOE would abide by the NRC's regulations on advance notifications to state and local governments associated with transporting spent fuel. NRC has reviewed and certified a number of Type B package designs

which could be used for transport of spent fuel to a repository, and has additional designs under review. I am pleased to state that the NRC has consistently met the obligations established by these Acts.

In recognition of their joint regulatory responsibilities for the safe transport of radioactive materials, the NRC and DOT cooperate under a Memorandum of Understanding (MOU). Under the MOU, the NRC's regulatory responsibilities include establishing requirements for the design and manufacture of Type B packages, establishing requirements for quality assurance programs, and establishing requirements for physical protection of spent nuclear fuel shipments. The NRC also requires advance notification to Governors of such shipments. DOT regulates the transport of all hazardous materials, including spent fuel, and has established regulations for shippers and carriers regarding radiological controls, hazard communication, training, response, and other aspects, including the use of preferred hazardous material shipment routes. Separately, the NRC also benefits from advice from its independent Advisory Committee on Nuclear Waste on issues such as the transportation of spent fuel.

NRC's regulations contained in 10 CFR Part 71 describe the requirements for spent fuel transportation package design approvals, quality assurance requirements, and inspections. The NRC also has regulatory requirements in 10 CFR Part 73 for the physical protection of spent fuel shipments. These safeguards regulations require licensees to develop and implement a security plan to meet performance objectives, including minimizing the possibilities for radiological sabotage.

## **Safety and Security of Spent Fuel Transportation**

To ensure transportation package designs meet NRC regulations, the NRC staff has a very thorough certification process. This process requires the NRC staff to conduct comprehensive reviews of the package's design against certain "hypothetical" accident conditions. Applicants are required to demonstrate that packages would meet stringent requirements through testing of subscale models and rigorous analyses of these packages under an NRC-approved quality assurance program. Certificate holders who fabricate packages and licensees who use the packages are also required to conduct their activities under an NRC-approved quality assurance program. NRC staff also reviews and approves quality assurance (QA) programs of applicants for transportation package certificates of compliance and registered users of packages. The review assures that the QA program adequately addresses all applicable regulatory requirements and that the program includes design, purchase, fabrication, shipping, storage, cleaning, assembly, inspection, testing, operation, maintenance, repairs, and modification activities.

The NRC believes the safety protection provided by the current transportation regulatory system is well established. Nonetheless, we continually examine the transportation safety program. In FY 2000, NRC published a reexamination of its generic assessment of spent fuel transportation risks to account for the fuel, cask and shipment characteristics likely to be encountered in future repository shipping campaigns. Over 2 years ago, NRC began an additional review of cask performance under severe impact and fire accident conditions. The NRC staff has actively and will continue to solicit public comment on the plan for this review. Through partial funding, the NRC is also supporting a study by the National Academy of

Science's Board on Radioactive Waste Management that will examine radioactive material transportation, with a primary focus on spent fuel transport safety. As a part of its evaluation, the NRC staff is analyzing appropriate national transportation accidents, such as the 2001 train accident in Baltimore, Maryland, to determine if lessons learned from that event would require changes in our transportation requirements or analyses. Additionally, NRC is sponsoring a study to update its evaluation of cask response to acts of sabotage and terrorism. NRC plans to utilize the results of these studies as input into its comprehensive review of security in light of the events of September 11. We will decide within the next year whether changes are needed in our physical security requirements for spent fuel shipments. Finally, the NRC and DOT are currently conducting joint rulemakings as part of our periodic updates of our respective transportation regulations, to be consistent with the latest version of the IAEA's standards on the transportation of radioactive material.

NRC also reviews and approves physical security plans for spent fuel shipments. These plans provide information on how licensees comply with NRC spent fuel shipment physical protection requirements, including advance notification of each shipment to Governors, the establishment of redundant communication capability with the shipment vehicle, the arrangement of law enforcement contacts along the route, and provision of shipment escorts, including armed guards in certain circumstances.

## **Conclusion**

The NRC believes the current regulatory framework ensures safe and secure transport of spent fuel today. The NRC also believes that shipment of spent nuclear fuel to a permanent

geologic repository can be safely accomplished in the future. We are continually assessing our regulatory framework to ensure that it adequately protects public health and safety and the environment. This includes establishing design standards for packages intended to transport spent nuclear fuel, reviewing and approving applications for the design of Type B transportation packages, inspecting the fabrication and use of such packages, implementing quality assurance requirements, and implementing physical protection measures. As I believe this statement makes clear, we take these obligations very seriously.

I will be pleased to answer any questions you may have.