

July 5, 2002

Mr. Ralph Landers
5381 East Grain Mill Road
Pahrump, NV 89061-7700

SUBJECT: RESPONSE TO 05/25/02 LETTER REGARDING CONCERNS RELATED TO
TRANSPORTATION AND CASKING OF SPENT NUCLEAR FUEL

Dear Mr. Landers:

I want to thank you for attending our recent meeting in Pahrump and also for taking the time to send the U.S. Nuclear Regulatory Commission (NRC) a letter about your concerns related to the safe transportation of spent nuclear fuel. You discussed a number of issues that are important to the NRC in our role as a regulator. I will explain to you how we are dealing with each of the issues as appropriate.

You commented about the value of performing "actual real-world testing" of a spent fuel transportation cask versus performing computer simulations and analyses. Our regulations allow for either physical testing of cask designs (full or scale model) or the use of another method of demonstration acceptable to the NRC. Acceptable methods include computer simulation or modeling and supporting analysis. However, I must add that the NRC is currently planning to conduct a research program to subject a transportation cask of current design vintage to a full scale actual impact and fire conditions test. This research program is called the Package Performance Study. The staff is scheduling public meetings to discuss a proposed test plan for the study in both Pahrump and in Las Vegas on the 21 and 22 of August and you will be provided details on the times and addresses for the meetings by mail under separate cover. I hope you will be able to attend one of the meetings and provide your inputs and comments verbally and/or in writing.

I am well aware of the number of types or recent rail accidents and these accidents remind both the regulator and the shippers that future shipments of spent nuclear fuel will need to be conducted with equipment (rail cars, locomotives, and track) that has been inspected and suited for the loads to be carried in accordance with Department of Transportation (DOT) requirements. Further, the staff on the trains and those supporting the shipments in a security and emergency preparedness role will also need to be properly trained and prepared for all expected and unexpected events. Both the NRC and DOT regulations and independent oversight activities will help to ensure that each shipment will be adequately protected and executed with care and vigilance. I can assure you that the NRC will only approve cask designs and shipments that are safe.

You stated that spent nuclear fuel needs to be cooled before it is shipped. This is a true statement. Generally, the minimum cooling time for recently approved casks is about 5 years before spent fuel would be loaded into a shipping cask. This cooling period reduces the actual heat loads that will be experienced by the cask and maintains any heat stresses on the shipping package well below design limits. The nature of spent fuel from a radiological hazard

perspective dictates the stringency of our regulations that provide for multi layers of protection in the cask design for shielding and structural support for the fuel as it moves down the road or railway.

You stated that the NRC is proposing a contingency of opening a geological repository after closure and storing the fuel elsewhere. Our rules require that a repository design for Yucca Mountain preserve the option of waste retrieval throughout disposal, and until a program of performance confirmation monitoring is complete. The Energy Department must include, in its potential license application, a description of its plans for retrieval and alternate storage of the recovered waste. The Energy Department must also design the repository so that it could remove any or all the waste, on a reasonable schedule, starting up to 50 years after disposal begins. These provisions in our rules intend that waste retrieval would be an unusual event, only undertaken to protect public health and safety. If it becomes necessary, the Energy Department would have to manage the recovered waste in compliance with applicable rules in effect when the waste is removed.

You also noted that Yucca Mountain may not be large enough to hold the total volume of spent nuclear fuel that may be generated in this country. In accord with the Nuclear Waste Policy Act, the NRC must only permit the disposal of up to the equivalent of 70,000 metric tons of heavy metal, at Yucca Mountain, until a second repository is in operation. Under the Act, the Energy Department must seek approval from the Congress to locate a second repository.

You brought up concerns about the safety and security of transport in terms of truck driver and railroad engineer fitness for duty, the capability of road and railways to accommodate the heavy loads of shipments of spent nuclear fuel, and the potential for sabotage and terrorism. These are aspects and responsibilities that each shipper of radioactive material whether it be the Department of Energy or a nuclear utility must address and address effectively. The DOT requirements and regulatory guidance specify the qualifications for drivers and engineers and the process for certification and validation of driver capability. We would expect that the shippers of spent nuclear fuel will ensure that the contractors they use to convey their casks will employ only the most qualified staff and that drivers and railroad engineers will perform their jobs free from the effects of any substances that would affect their on-the-job performance. Further, the DOT includes specifications for roads and railways to address the expected maximum weight of vehicles that must be considered by shippers when choosing shipping routes. Following DOT guidelines, the shippers must use the roads or railways that can safely accommodate the total weight of the spent fuel being shipped. You asked if radiation monitors are kept on the trucks. There is no requirement to have monitors on the trucks, but radiation dose rates for each cask are measured at the beginning and end of each trip and during off-normal events to ensure that the dose any person would receive during the shipment would be below regulatory limits.

Concerning the potential for terrorism, the NRC has existing regulations that directly address this issue, specifically in 10 CFR Part 73.37, "Requirements for physical protection of irradiated reactor fuel in transit." This regulation includes measures that help a shipper detect, prevent, and respond to acts of terrorism. For example, the regulation requires that the shipper provide at least one escort to maintain visual surveillance of the shipment when the vehicle is stopped. The regulation requires armed escorts when the shipment uses highways that pass through heavily populated areas. Recently, the NRC has issued advisories to shippers of spent nuclear fuel and large quantities of radioactive materials to enhance their security measures based on

the events of 9/11/01. The NRC is currently conducting a comprehensive review of its security regulations to determine if any enhancements are required to address new potential threats that could affect future shipments. The NRC staff is also conducting vulnerability studies for transportation cask designs to determine what the effects would be on casks subject to new and different terrorist attacks methods including the crash of a jumbo jet filled with fuel. The NRC may also modify its transportation security requirements based on the results of this study. In any event, the NRC will have modified its regulations if necessary well before any major shipping campaign would begin to a geological repository.

Lastly, you mentioned the fact that both high and low levels of radiation exposure are important health effect issues. I agree and note that the NRC regulations, oversight, inspection and enforcement activities are intended to minimize the risk to the public from our licensees who use radioactive materials. These include quantities that range from small radioactive sources used by physicians to treat or identify illnesses to large sources used to fuel power reactors. Our regulations are written to maintain exposures to be as low as reasonably achievable (ALARA) under both normal and accident conditions for materials that are stored and used in one location and for those that are to be transported over roads and railways.

I hope you find that the above information responsive to your concerns and questions. I also hope that you continue to attend our public outreach meetings in Pahrump or in other locations in Nevada. We expect to continue to conduct meetings with interested citizens to discuss our responsibilities in the oversight of a potential geological repository, and to discuss our responsibilities in the regulation of transportation of spent nuclear fuel.

Sincerely,

/RA/ J. Linehan for

Martin J. Virgilio, Director
Office of Nuclear Material Safety
and Safeguards

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