January 11, 2000

MEMORANDUM TO: John T. Greeves, Director
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

FROM: E. William Brach, Director ORIGINAL SIGNED BY /s/
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TRANSPORTATION COMMENTS ON PROPOSED 10 CFR PART 63

The attachment contains recommended responses to the transportation comments that were received on the proposed 10 CFR Part 63 rulemaking. Spent Fuel Project Office (SFPO) assistance in drafting comment responses was requested in a November 29, 1999, e-mail from Sandra Wastler to Patricia Eng. We appreciate the efforts made to involve SFPO early in this process.

Questions on the recommended responses may be directed to Robert Lewis at 301-415-8527.

Attachment: Recommended responses

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12 Transportation

Issue 1: What regulations or controls will be used to ensure nuclear waste is transported safely including operations at an intermodal transfer facility?

Comments: Commenters raised concern that the risks for transporting nuclear waste were not being addressed in proposed Part 63. Many commenters interpreted the absence of transportation criteria in proposed Part 63 as an indication that NRC has de-emphasized transportation issues. One commenter raised concern over the possibility of terrorism and theft of spent fuel shipments.
[1.01, 2.03, 4.03, 18.05, 42.06, 44.05, 45.05, 49.02, 54.03, 71.08, 92.20, 94.01, LV1.18, LV1.29, LV1.32, LV2.34, LV2.36, LV2.38, LV2.41, LV2.45, AV.01, AV.22, B.14, B.26, C.03]

Response:

Nuclear waste transportation is not specifically addressed by the proposed 10 CFR Part 63 because Part 63 is a licensing regulation for the repository, and because the NRC and the U.S. Department of Transportation (DOT) have existing regulations that address transportation of all NRC-licensed radioactive materials (Including transport of nuclear waste to a repository). NRC transportation regulations are found in 10 CFR Parts 71 (safety) and 73 (safeguards). DOT regulations are in Title 49 of the Code of Federal Regulations. To duplicate these requirements in 10 CFR Part 63 would be redundant, inconsistent, and confusing. In 1981 (46 FR 21619), after a comprehensive study of radioactive materials transportation rules and practices, the Commission concluded that no immediate changes were needed to improve safety and that the current regulatory system for transportation of radioactive material provides for an adequate level of protection of public health and safety. Subsequent studies have affirmed that the Commission's 1981 conclusions remain valid.

Section 180 of the Nuclear Waste Policy Act (42 USC 10175) requires the U.S. Department of Energy (DOE) to use packages that have been certified by the NRC for transportation of spent nuclear fuel and high-level radioactive waste. The NRC regulations in 10 CFR Part 71 specify the standards for certification. These standards provide that a package shall prevent the loss or dispersion of radioactive contents, provide adequate shielding and heat dissipation, and prevent nuclear criticality under both normal and accident conditions of transportation. In addition, Section 180 requires DOE to provide funds and technical assistance for training of local public safety officials (e.g., emergency responders) along the routes.

The NRC's regulations in 10 CFR Part 73 address the requirements for the physical protection of spent fuel shipments. These requirements are currently the subject of an active petition for rulemaking (PRM 73-10), submitted by the State of Nevada. Issues related to terrorism or theft of spent fuel shipments during transport are beyond the scope of this 10 CFR Part 63 rulemaking.

A 1979 DOT-NRC Memorandum of Understanding (44 FR 38690) specifies that, in general, NRC regulates transportation licensing, packaging, and physical security while DOT regulates transportation preparation and operations. Facilities which temporarily handle and store radioactive material during and incidental to their transport (i.e., movement), such as operations at an intermodal transfer facility, are subject to DOT requirements.

Issue 2: How will transportation routes be selected and will local governments and communities be informed and consulted about the routes?

Comments: Commenters raised a number of questions regarding the selection of transportation routes for nuclear waste, such as: 1) will DOE analyze the impacts of transportation routes, 2) can rural roads be used to safely transport large nuclear waste shipments, 3) will transportation route selection be addressed in DOE's license application, 4) will local governments and communities be able to participate in route selection, and 5) does NRC require DOE contractors to be responsible for transporting waste or are third-party contractors responsible for transporting waste.
[59.12, 94.02, AV.23, AV.27, C.01, C.02, C.04]

Response:

The routing requirements and practices largely depend upon whether a particular shipment is made by highway or railway. The U.S. Department of Energy (DOE) is evaluating its options regarding the mix of road and rail shipments to the repository and will decide the appropriate level of analysis needed for transportation routes.

The U.S. Department of Transportation (DOT) has established specific highway routing requirements (49 CFR 397.101). Carriers of spent fuel shipments must follow "preferred routes," meaning routes designated by a State routing agency or the Interstate highway system (and city bypasses) where an alternate route is not designated by a State agency. In addition, the route selected must reduce the time in transit (i.e., one must take the most direct route). These routing requirements were developed considering the risks of transportation. Further, DOT has published guidelines (DOT/RSPA/HMS/92-02) for State agencies to use in performing route analyses to ensure that the overall risk of the shipments to the public is considered in designating alternate routes. The degree of local participation in the State routing agency's process may vary from State to State.

All spent fuel carriers, including contractors of either NRC licensees or DOE, have the responsibility to abide by the DOT's routing rules and the State requirements when they transport spent fuel by highway. There are no Federal regulations for selecting railway routing.

Any route selection issues are resolved by the shippers, carriers, DOT, and States. Plans for spent fuel shipments, including the proposed route, are submitted by the licensee for NRC approval, from a physical protection standpoint. NRC annually publishes a report, "Public Information Circular for Shipments of Irradiated Reactor Fuel," (NUREG-0725, Rev. 13), that describes the routes taken by commercial spent fuel shipments. 10 CFR 73.37 requires each NRC licensee to provide advance notification to the governor of a State (or the governor's designee), of the shipment of spent fuel, through, or across the boundary of that State, before the transport. However, for physical protection reasons, certain information on shipments is protected from general release until after the shipment (or series of shipments) is completed.

Issue 3: What criteria will be used to ensure the shipping cask can survive a variety of challenges during transportation?

Comments: Commenters inquired into how shipping casks were designed and who was responsible for manufacturing the casks. Additionally, one commenter asked whether the shipping cask design and testing consider specific accident scenarios including sabotage. **[94.02, LV2.32, LV2.33, LV2.37, LV2.40, LV2.42, LV2.43, C.01]**

Response:

Typically, private firms manufacture a cask under contract to the cask's vendor. NRC requires that casks be designed, fabricated, used, and maintained under an NRC approved quality assurance plan. Activities under these plans are subject to NRC's inspection and enforcement programs. Safety standards, design criteria, and design test requirements for spent fuel casks are set forth in NRC regulations at 10 CFR Part 71. Casks must be designed to withstand a series of impact, puncture, and fire environments, thereby providing reasonable assurance that packages will withstand serious transportation accidents. NRC regulations require that casks protect against the loss or dispersion of radioactive contents, provide adequate shielding and heat dissipation, and prevent nuclear criticality, under both incident-free and accident conditions of transportation. An application for a cask design is submitted to NRC by the cask vendor, and an approval certificate must be issued by the NRC before a cask can be used to transport spent fuel. NRC conducts an independent design review prior to issuing a cask certificate.

In the 1980's NRC sponsored experiments and studies of the effects of sabotage on casks that meet NRC's safety standards. In addition, DOE has sponsored similar studies, most recently in 1999. The estimated performance of spent fuel casks during historically severe, actual accidents (viz., these severe accidents did not actually involve radioactive materials) was investigated as part of the NRC-sponsored, 1987 Modal Study (NUREG/CR-4829). NRC's studies show that risks are low, from both incident-free shipments of radioactive material and possible accidents during transport.

Issue 4: Will dose estimates be calculated for exposures from transportation and operations at an intermodal transfer facility?

Comments: Commenter asked that dose estimates be calculated for exposures from transportation and operations at an intermodal transfer facility. **[95.03, 95.05, 95.05, B.28]**

Response: NRC has estimated the radiation doses to the population as a result of transportation of radioactive material. These estimates are performed as part of environmental impact studies such as NUREG-0170 (1977), "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes."

The specific operations that would occur at an intermodal transfer facility related to the repository have not been identified to NRC. Consequently, NRC is not aware of radiation dose estimates that have been performed for that facility. It is noted that radiation safety for facilities which temporarily handle and store radioactive material during and incidental to their transport (i.e., movement), such as operations at an intermodal transfer facility, falls under DOT requirements.