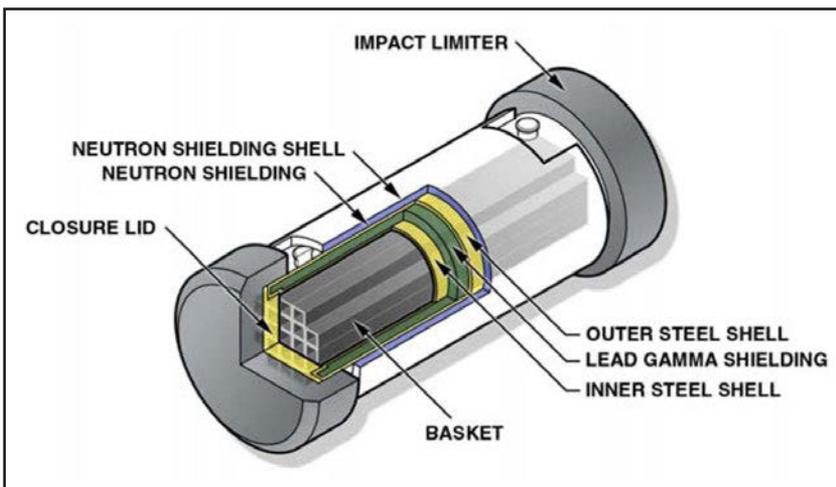


Technical issues

The technical issues to be addressed in preparing for a large transportation effort span a broad range of topics. These issues include uncertainties or questions about the condition of some wastes, particularly high-burnup commercial SNF that was utilized in a reactor core for longer periods than low-burnup fuel, and some DOE-managed SNF. In other cases, the condition of the commercial SNF is known, but additional packaging, modified cask designs, or modified transportation certificates of compliance will be needed in order to meet the requirements for transportation set by the Nuclear Regulatory Commission. For example, certain SNF that has a relatively high enrichment of uranium-235 (the "initial enrichment" of U-235), but a relatively low burnup, may not meet transportation requirements as packaged without modification to the associated cask designs or certificates of compliance.

Other uncertainties are associated with how certain containers that store SNF could be transported. For commercial SNF, some of the welded stainless steel canisters used for SNF storage at commercial nuclear power plant sites were not designed for transportation and are not approved for that purpose by the NRC. Similarly, more than 80 percent (by mass) of DOE-managed SNF has been packaged into storage containers at the DOE's Hanford Site in the state of Washington, but those containers require further structural analyses before the NRC can approve them for off-site transportation. The DOE also must identify an existing transportation cask that can be used for transporting the Hanford SNF or develop a new cask



A diagram shows the components of a generic rail cask for spent fuel. (Image: NRC)

design. Still other types of DOE-managed SNF and HLW have not yet been packaged for transportation. A detailed evaluation of the inventory of DOE-managed SNF and the expected DOE path forward for managing this SNF was published by the Board in 2017 [3].

Addressing the uncertainties associated with the various SNF and HLW types and the containers in which they are stored will be necessary before these wastes can be transported. Furthermore, integrating the DOE waste transportation program with the activities of other federal agencies such as the NRC and the Department of Transportation, as well as with private entities such as the nuclear utilities and rail carriers, will require significant advance planning and coordination.

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