

A general license authorizes a nuclear power plant licensee to store spent fuel in NRC-approved casks listed in 10CFR 72.214 (CFR, Title 10, Part 72) at a site that is licensed to operate a power reactor under 10 CFR Part 50. Licensees are required to perform evaluations of their site to demonstrate that the site is adequate for storing spent fuel in dry casks. These evaluations must show that the cask Certificate of Compliance conditions and technical specifications can be met, including analysis of earthquake intensity and tornado missiles. The licensee must also review their security program, emergency plan, quality assurance program, training program, and radiation protection program and make necessary changes to incorporate the ISFSI at its reactor site.

13.3.2 Types of Dry Storage Casks

While there are currently 17 approved spent fuel storage casks listed in 10CFR72.214 (CFR, Title 10, Part 72), the majority of commercial spent fuel is stored in concrete storage casks or modules in a vertical or horizontal configuration, respectively. For the vertical configuration, the fuel may be stored in either an aboveground storage cask or can be placed into a storage location constructed in the ground. Figure 13.7a and b shows a schematic and photograph of a horizontal dry storage module; Figure 13.8a and b shows a schematic and photograph of an aboveground vertical storage cask; and Figure 13.9a and b shows a schematic of an underground vertical storage cask.

An aboveground vertical cask consists of a cylindrical storage overpack with the internal canister stored in an upright position. The storage overpack is constructed from steel and concrete and provides for physical protection of the internal canister and massive shielding to reduce the emitted radiation. Inlet and outlet vents are provided at the top and bottom of the storage overpack to facilitate removal of the residual spent fuel decay heat through natural convective cooling.

An underground vertical cask consists of a subterranean cylindrical cavity with the internal canister stored vertically, such that the top of the canister is at or near the surface. A foundation pad is constructed below the cylindrical cavities to support the loaded canisters, with an additional concrete pad at the top of the canister enclosure that provides

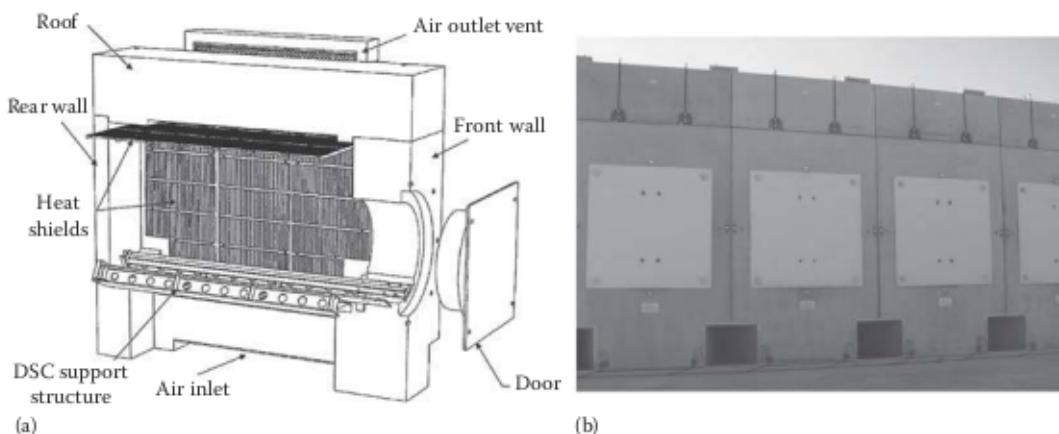


FIGURE 13.7

(a) Schematic of horizontal spent fuel storage cask. (From Final safety analysis report for the NUHOMS HD horizontal modular storage system for irradiated nuclear fuel, Revision 0, USNRC Docket No. 72-1030.)

(b) Photograph of horizontal spent fuel storage cask.