

3. Brian Sheron's Spent Fuel Transport Car



Once nuclear fuel is used up in a reactor, it must be removed and transported to a safe storage location. Spent nuclear fuel is still highly radioactive and protection is needed when people are nearby and from accident while being transported.

For my Master Builder-Cars AP Certificate I

chose to model a spent fuel transport car that is used by the Department of Energy to transport spent nuclear fuel from its reactors to their storage locations.

The nuclear fuel is contained in zirconium-clad rods. A spent nuclear fuel assembly, which is made of of a number of individual fuel rods, is loaded, with several other assemblies, into a transport cask. On each end of the cask are large round discs, called impactors, which are designed to protect the fuel assemblies in the cask from impact in the event of an accident.

Because of its size and weight, the spent fuel shipping cask rides on a specially-designed, four-truck flat car with articulated ends. Since at the time I built this car I worked for the U.S. Nuclear Regulatory Commission, I had access to scale drawings and photos of the cask and the car.

The entire HO scale car was scratch-built. The cask with the impactors was formed on a wood lathe from a single piece of round stock. The cask supports and tie rod system holding the impactors in place on each end of the cask were all scratch-built, as was the flat car with the articulated ends. I also created all the decals on my computer. Only the trucks, couplers, and brake wheel and stand were commercial products.

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