

# International Conference on Management of Spent Fuel from Nuclear Power Reactors: An Integrated Approach to the Back End of the Fuel Cycle



Contribution ID: 40

Type: POSTER

## Development of a U.S. Rail Transport Capability for Spent Nuclear Fuel and High-Level Waste

The Department of Energy (DOE) is laying the groundwork for implementing an integrated nuclear waste management disposition system. This includes preparing for future large-scale transport of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) since transport will be a necessary component of any integrated nuclear waste management disposition system. DOE continues to plan for and develop options for decision-makers on the design of an integrated nuclear waste management disposition system. A significant component of this integrated disposition system is the development of a rail transport capability for SNF and HLW as described in this paper.

The Association of American Railroads (AAR) has published a technical standard developed specifically for railcars used during transport of High-Level Radioactive Material (HLRM): Performance Specification for Trains Used to Carry High-Level Radioactive Material, Standard S 2043. AAR defines the term HLRM to include SNF and HLW.

HLRM will be shipped in transport casks certified in accordance with 10 CFR Part 71 by the Nuclear Regulatory Commission (NRC). The NRC has certified transport cask designs supplied by various manufacturers. These rail transportation casks will weigh between approximately 82 and 156 tons (74 and 141 metric tons) when loaded; additionally, each cask will be attached to the railcar by a cradle (often called a "skid") that is expected to weigh between 10 and 20 tons (9 and 18 metric tons). No existing railcars have been approved as AAR S-2043 compliant for shipping these commercial NRC certified casks. Therefore, new railcars that meet S-2043 will need to be designed, tested, approved and fabricated to transport HLRM over the railroad infrastructure in the United States.

The project is being implemented in three phases. Phase 1 is Mobilization and Conceptual Design during which conceptual designs for both the cask and buffer railcars will be developed. Phase 2 is Preliminary Design during which the preliminary designs of the cask and buffer railcars will be completed. Phase 3 is Prototype Fabrication during which one prototype cask railcar and two prototype buffer railcars will be fabricated. The total duration for all 3 phases is estimated to be about 4 years. A subsequent project is planned to perform the testing and obtain approval of the cask and buffer railcars from the AAR.

### Country/ int. organization

USA/ Department of Energy

**Primary author:** Dr SCHWAB, Patrick (U.S. Department of Energy)

**Co-authors:** Dr FELDMAN, Matthew (Oak Ridge National Laboratory); Ms BATES, Melissa (U.S. Department of Energy); Mr DAM, Scott (TechSource, Inc.); Dr MAHERAS, Steven (Pacific Northwest National Laboratory); Mr REICH, Willaim (Oak Ridge National Laboratory)

**Presenter:** Dr SCHWAB, Patrick (U.S. Department of Energy)