Energy and Environment

Storage of DOE SNF at Hanford

For more information

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Most of the spent nuclear fuel (SNF) at Hanford is stored at the Canister Storage Building Complex (CSBC). This amounts to about 2129 MTHM and includes ~400 multi-canister overpacks (MCOs) and several dry cask systems. Less than 1 MTHM is being retrieved from the 200 West Area and will also be stored at the CSBC.

The CSBC includes an above ground dry cask system on reinforced concrete pads and the CSB. The CSB is a steel structure covering three below-grade vaults, each containing 220 tubes 40 ft long. Loaded MCOs are stored in the first vault. Excess storage capacity exists in the remaining two vaults.

The Hanford SNF storage facilities have a design life of 40 years. During this time, no additional repackaging or fuel movements are planned. These fuels will continue to be stored at the CSBC pending a decision on final disposition. After a decision is made, new facilities will be required for packaging fuels for off-site transport. Approximately 5 years will be required to plan and bring these facilities on line.

Storage tubes in CSB vault (during construction).

The CSBC facilities are relatively new facilities that were placed into operation since 2000. Although designs are based on providing 75 years of storage, the safety authorization basis for the CSBC facilities is currently 40 years. The 40 year period is consistent with other licensed spent fuel storage facilities and was considered, based on the presumed availability of a geologic repository, to be sufficient to extend beyond the anticipated need for the facility.

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The CSBC operations include surveillance programs to provide data for assessing storage system performance to confirm that satisfactory conditions are maintained. This data may also be used to support a technical justification for extending the facility storage lifetimes beyond 40 years and/or to demonstrate that these materials can be safely transported.

Fuel-related records and safety equipment are maintained under an auditable quality assurance program that addresses expected off-site disposal requirements.

Left: CSB exterior (truck bay access).

Right: CSB storage positions and module handling machine.

It is assumed that the MCOs will be acceptable for transport and placement in a future repository and will not require repackaging. A small amount of fuels at Hanford will require repackaging before transport to a repository. Those fuels will be packaged in the DOE Standardized Canister. The National Spent Nuclear Fuel Program (NSNFP) has an ongoing technology development program to complete the remote closure and non-destructive examination systems for the standardized canister. This technology will be deployed at Hanford to repackage the remaining fuels.

Staff members from the NSNFP are also participating in storage initiatives by the Office of Nuclear Energy's Used Fuel Campaign and the EPRI/NRCs' efforts to develop a technical justification for very long term storage of used fuel. The NSNFP participation in these initiatives will ensure DOE EM is fully integrated and informed of material degradation and ageing management issues for fuel elements and storage systems. NSNFP intends to share information, regulatory issues, and other technical issues from these meetings with Hanford facilities for their use in planning for very long term storage.