

Developing a Data Base Supporting Extended Storage and Transportation Program of SNF in the USA

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The Secretary of Energy has withdrawn the application to develop Yucca Mountain as a repository for disposal of spent nuclear fuel (SNF), and commissioned a Blue Ribbon Panel to recommend a different approach to handle the fuel. Whatever path is recommended the action would probably lead to a need for extended dry storage (EST) of the SNF. To date, the staff of the Spent Fuel Storage and Transportation Division (SFST) of the NRC has observed no data or operating experience that indicates that SNF cannot be safely and securely stored for an extended term and remain in a transportable configuration in large casks under the proper storage conditions with an appropriate aging management plan. However, the staff currently believes that additional data is necessary to confirm and to demonstrate that EST and subsequent transportation, without repackaging, can be safely accomplished.

The three areas of concern for aging management are the ability of the cladding, canister, and overpack to ensure that the regulatory functions of criticality control, shielding, confinement, containment, retrievability of the fuel, and environmental preservation are met. This is especially true for higher burnup fuels, new designs of fuels using new materials, and new climatic and human threats. To do so may require new monitoring techniques for sealed canisters, and information to determine if and when repackaging may be required.

To support regulatory and technical requirements, the SFST staff has developed a four part plan consisting of: 1) identification of additional data needs in the available technical information supporting long-term storage of SNF, if any, 2) performance of short term research to address the identified needs, 3) evaluation of the current framework, and 4) performance of a well-monitored long-term demonstration that uses high burnup fuel (HBU) (i.e. >45 GWD/MTU). This plan will be implemented in cooperation with the EPRI Extended Storage Cooperative Program (ESCP), in a publically accessible manner. This paper will discuss the development of this plan.