

Proposed DSFST Paper for IAEA International Workshop on Advances in Applications of Burnup Credit for Spent Fuel Storage, Transport, Reprocessing, and Disposition

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Regulatory Perspective on Confirmatory Burnup Measurements for Burnup Credit in Spent Nuclear Fuel Transportation Packages

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Abstract:

In an effort to make spent fuel transportation packages more efficient, applicants for transportation package Certificates of Compliance under Part 71 of Title 10 of the U.S. *Code of Federal Regulations* (10 CFR Part 71), "Packaging and Transportation of Radioactive Material," have increasingly sought burnup credit in the package criticality analysis. The U.S. Nuclear Regulatory Commission (NRC) Division of Spent Fuel Storage and Transportation published Interim Staff Guidance 8 (ISG-8), "*Burnup Credit in the Criticality Safety Analyses of PWR Spent Fuel in Transport and Storage Casks*," in May of 1999, with subsequent revisions in July of 1999 and September of 2002. This document provides guidance regarding acceptable approaches to burnup credit criticality analyses for intact spent PWR assemblies in transportation packages.

One of the recommendations in ISG-8 is that the user of a burnup credit spent fuel transportation package perform a measurement that confirms the reactor record for each assembly to be loaded. This also appears as a requirement in IAEA TS-R-1, "Regulations for the Safe Transport of Radioactive Material," Paragraph 674. This measurement would be difficult for the over 1000 dry cask storage systems which are already loaded in the U.S. Unloading dry spent fuel casks would increase the potential for fuel handling incidents as well as operational dose to workers. NRC is evaluating possible alternatives to the out-of-core burnup measurement recommendation in ISG-8, including additional administrative requirements for package loading, as well as a misload analysis based on the existing spent fuel inventory. This paper will discuss considerations related to the out-of-core confirmatory burnup measurement and its proposed alternatives.