

Nuclear Data Extracted for Use in Burnup Credit Calculations



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Burnup credit is a negative reactivity credit caused by a decrease in the amount of uranium-235 and the accumulation of other nuclides in nuclear reactor fuel while it has been used to generate power. Realistic bounding operating conditions can be used in fuel burnup modeling to support realistic conservative burnup credit calculations. Reactor operating data extracted, organized, and processed from documents from several commercial nuclear power plants offer valuable information for nuclear fuel burnup calculations. Axial burnup distributions, fuel temperatures, and moderator densities were among some of the information extracted for reactors such as Crystal River, Sequoyah, Three Mile Island, and Quad Cities. In addition, soluble boron concentrations were obtained for pressurized water reactors. This and additional data will be used to more accurately model nuclear fuel burnup. This work is part of a larger project that's main goal is to safely and economically transport commercial spent nuclear fuel in casks.

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