

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

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**Title:** *Fuel Burnup Plant Records: Generation and Accuracy*

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**Abstract:**

An accurate evaluation of the spent fuel assemblies burnup is essential to the allowance and implementation of a burnup credit program. One of the recommendations in the U.S. Nuclear Regulatory Commission (NRC) Interim Staff Guidance 8 (ISG-8) Revision 2 is an out-of-core measurement to confirm the reactor record and compliance with the assembly burnup value used for cask loading acceptance. The NRC is currently evaluating potential alternatives to the out-of-core measurement recommendation in ISG-8. This evaluation includes the determination of the reliability and accuracy of the burnup values from the reactor records and whether these values are acceptable for use in burnup credit and what additional requirements and safeguards would be needed to allow their utilization.

The fuel assembly burnup is a core-follow parameter that is treated and controlled as safety-related data and is used extensively in reactor design and in safety analysis. It is also used in regulation compliance in the on-site spent fuel management. This paper describes the instrumentation and the measurement processes, as well as the computer codes that are used to generate the reactor records in a typical pressurized water reactor (PWR) in the United States. It also reviews the parameters important to the accuracy of these records and the variability in flux map measurements resulting from the successive methodology and code changes over the past two decades.