

January 22, 2001

Dr. Cecil V. Parks
Oak Ridge National Laboratory
P.O. Box 2008
Building 6011, Mail Stop 6370
Oak Ridge, TN 37831-6370

SUBJECT: SPENT FUEL PROJECT OFFICE INTEREST IN THE DEVELOPMENT AND
USE OF AUTOMATED BIASING CAPABILITIES

Dear Cecil:

This letter is to express the U.S. Nuclear Regulatory Commission (NRC) Spent Fuel Project Office's (SFPO's) interest in the efforts your section is taking to enhance the available methods for automated variance reduction for Monte Carlo radiation transport calculations. As the industry moves toward dry storage and transport of high-burnup fuel, new challenges in the design of the storage casks will likely lead to the need for improved methods for assessing the radiation dose outside the heavily shielded spent nuclear fuel transport and storage casks. Although SFPO has funded and continues to use the SAS4 sequence of the SCALE code system, the sequence is currently restricted to single cask-like geometries and use of the variance reduction based on one-dimensional discrete ordinates calculations. This limitation prevents us from using SAS4 to (1) evaluate storage cask arrays, (2) investigate the dose from corner regions of a single cask, and (3) evaluate potential streaming paths. These particular evaluations are becoming more important as the size of storage cask arrays at utility sites increase and as the cask designs become optimized with respect to the regulatory dose limits. Consequently, better methods for evaluating storage arrays are needed.

SFPO is interested in your efforts to investigate the potential for developing a more robust, general-purpose capability that can address the problems described above. If it is demonstrated that such a capability can be developed to provide a reliable and easy-to-use computational tool, the NRC Spent Fuel Project Office would consider incorporating this capability in our technical assistance program for upgrading the SCALE code system.

These comments are based on my experience in the SFPO as a technical reviewer for shielding and criticality safety and as the technical project manager for the SCALE technical assistance project.

Sincerely,
/RA/ original signed by /s/
Carl J. Withee
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

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