

March 1, 2001

MEMORANDUM TO: M. Wayne Hodges, Director  
Technical Review Directorate  
Spent Fuel Project Office  
Office of Nuclear Material Safety and Safeguards

FROM: Farouk Eltawila, Acting Director **/RA/**  
Division of Systems Analysis and Regulatory Effectiveness  
Office of Nuclear Regulatory Research

SUBJECT: ASSISTANCE IN IMPLEMENTING MORE REALISTIC METHOD FOR  
OFFSITE DOSE ANALYSIS FOR DRY CASKS

As part of the agency's initiative to develop more realistic methods of transient and accident analysis to promote safety enhancements and reduce unnecessary regulatory burden, RES completed, in-house, a more realistic analysis of offsite dose from leakage of dry casks under design-basis conditions (memo from A. Thadani to W. Kane of June 26, 2000). The goal of the analysis was to estimate the safety margin in the NMSS Interim Staff Guidance-5 (ISG-5) assumption of no deposition of airborne radioactive material inside the cask. RES estimated the safety margin by calculating the individual offsite dose with and without deposition inside the cask. The analysis concluded that the calculated individual offsite dose from cask leakage could be reduced by a factor of 400 if credit was given for deposition inside the cask. Your memorandum of January 26, 2001, requested assistance in implementing the more realistic method. Subsequently, your staff stated their interest that RES initially train four technical reviewers to use this more realistic method and then provide assistance in updating ISG-5.

RES would be pleased to provide this training and assistance. RES will provide informal training to four reviewers in the use of the more realistic method. This consists of training in the use of the RADTRAD reactor accident analysis code. Scheduling of the training, which is expected to take place in March, will be coordinated with the participating staff. After this training, RES will be available for consultation. We estimate a level of effort for RES staff of three weeks for this training and consultation. This approach was discussed and agreed upon with your cognizant staff. Also, RES will be available for assistance in updating ISG-5.

Because RADTRAD is a reactor accident analysis code, its use for cask analysis requires changes to its three code data files: source term file, nuclide data file, and dose conversion factor file. We made these changes, in-house, for the HI-STORM cask as part of our June 26, 2000, analysis. Use of RADTRAD for cask analysis also involves work arounds for some of the code inputs. Therefore, we believe the following code improvements are needed: a) formally implementing these data file changes together with verifying and updating the documentation and b) developing a separate specialized version of RADTRAD for cask analysis. These changes would greatly facilitate use of the code, along with improved methods, by your staff in its licensing evaluations. We estimate this code development would take six staff months of effort. Please advise us of your interest, by user need, so that we can include this work in our planning for FY2002.

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