August 13, 2008

MEMORANDUM TO: Michael F. Weber, Director
Office of Nuclear Material Safety and Safeguards

FROM: Brian W. Sheron, Director **/RA/**
Office of Nuclear Regulatory Research

SUBJECT: USER NEED MEMORANDUM: REQUEST TO RESEARCH TO ASSIST SFST TO EXAMINE THERMAL IMPACT OF VARIATION IN ENVIRONMENTAL CONDITIONS ON DRY STORAGE (NMSS USER NEED NMSS-2008-004)

Reference: Memorandum from E. William Brach to F. Eltawila, June 30, 2008.

In the referenced memorandum, the Office of Nuclear Material Safety and Safeguards (NMSS) requested the Office of Nuclear Regulatory Research (RES) to investigate the thermal impact on spent fuel dry storage casks as a result of varying environmental conditions. Among the environmental conditions that can lead to fuel cladding temperatures above the allowable limits, NMSS cited ambient temperature, wind conditions, and elevation. In addition, NMSS requested these investigations be performed on casks with two and four air vents. Specifically, NMSS requested RES to perform computational fluid dynamics (CFD) analysis of three storage casks system designs including the underground HOLTEC design, an aboveground vertical design, and an aboveground horizontal design. NMSS requested that RES complete the work within 18 months after the starting date.

RES will use CFD analysis to investigate the effect of the different environment factors that can affect the thermal performance of a ventilated storage dry cask. The investigation will be applied to three storage casks system designs including underground HOLTEC design, an aboveground vertical design, and an aboveground horizontal design.

In discussion with Jorge Solis of your staff, it was agreed that RES will complete the work within 30 months after the starting date, due to heavy work load.

CONTACT: Ghani Zigh, RES/DSA
301-415-5895

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