

## **NRR-PMDAPEm Resource**

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**From:** Saba, Farideh  
**Sent:** Tuesday, March 31, 2015 8:22 AM  
**To:** Williams, Gordon Robert (grwilliams1@tva.gov); Schrull, Edward Dustin (edschrull@tva.gov); Green, Daniel (dgreen@tva.gov)  
**Cc:** Helton, Shana; Shoop, Undine  
**Subject:** Revised ARCB RAI 5-1

**Importance:** High

Ed, Gordon, and Dan,

Please see the following revised RAI by Radiation Protection and Consequence Branch. Please respond by April 30, 2015, for the staff to be able to complete its review. I will send you this RAI by an official letter.

Thanks,

Farideh

### REQUEST FOR ADDITIONAL INFORMATION

#### BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

#### LICENSE AMENDMENT REQUEST TO CHANGE TECHNICAL SPECIFICATIONS

#### TO REVISE MAIN STEAM ISOLATION VALVE LEAKAGE

#### DOCKET NO. 50-259, 50-260 AND 50-296

By letter dated November 22, 2013, (Agencywide Documents Access and Management System (ADAMS) Package No. ML14015A402) Tennessee Valley Authority (TVA), (the licensee) submitted a license amendment request to adopt a change to the technical specifications to decrease the allowable leakage rate criteria for the Main Steam Isolation Valves. The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee submitted and determined that the following additional information is required to complete the evaluation.

#### **ARCB 5-1**

Tennessee Valley Authority's (TVA) response to the Nuclear Regulatory Commission (NRC) staff's request for additional information (RAI) Number 5 (-5), dated September 30, 2014 (ADAMS Accession No. ML14275A247), indicated that TVA's credited deposition is based on input parameters and assumptions (i.e. aerosol size - diameter range and distribution) from AEB 98-03, "Assessment of the Radiological Consequences for the Perry Pilot Plant Application Using the Revised (NUREG-1465) Source Term" (ADAMS Accession No. ML011230531). On March 7, 2006, the NRC staff issued Regulatory Issue Summary (RIS) 2006-04, "Experience with Implementation of Alternative Source Terms," (ADAMS Accession No. ML053460347). The RIS provided the NRC staff's experience with the implementation of alternative source terms and stated that any licensee who uses the AEB 98-03 assumptions should provide a justification that the assumptions are applicable to their particular design. The RIS also stated that the choice of an effective settling velocity in any volume should account for the distribution of particle sizes in that volume. The NRC staff also contracted Sandia National Laboratories to perform a reassessment of deposition in the main steam lines using MELCOR. The results of this evaluation provided in a report entitled "Analysis of Main Steam Isolation Valve Leakage in Design Basis Accidents Using MELCOR 1.8.6 and RADTRAD," Sandia Letter

Report, SAND2008-6601, dated October 2008 (ADAMS Accession No. ML083180196) and experiments of over-heated irradiated fuel (i.e. "On the Nature of Aerosols Produced During a Severe Accident of a Water-Cooled Nuclear Reactor," M. P. Kissane, Nuclear Engineering and Design, 238, 2792-2800) indicate that the deposition calculated using AEB 98-03 inputs and assumptions yield non-conservative results.

Given that the deposition calculated using AEB 98-03 inputs and assumptions yield non-conservative results, TVA's September 30, 2014, RAI-5 response does not provide an adequate justification for continued use of the AEB 98-03 assumptions nor does it provide an adequate basis for approval of the proposed changes. It is essential for the staff to be provided an adequate technical basis for the modeling of aerosol deposition (i.e. aerosol time and spatial dependent effects, lambda vs. filters etc.) in the steam lines and condenser. Using the knowledge about the limitations of the AEB 98-03 model, provide a model for the aerosol deposition credited in the steam lines and condenser and justify the model (i.e. inputs, assumptions such as the aerosol sizes and distributions, and the methods used). Provide a revised dose analysis reflecting any updates to the deposition model and provide the staff enough information so that the staff can perform an independent assessment of the deposition model and dose analysis.

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