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October 22, 2001  
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U.S. Nuclear Regulatory Commission  
ATTN: Mrs. Deborah A. DeMarco  
Two White Flint North  
11545 Rockville Pike  
Mail Stop T8 A23  
Washington, DC 20555

Subject: Programmatic review of an abstract

Dear Mrs. DeMarco:

The enclosed abstract is being submitted for programmatic review. The abstract will be submitted for presentation at the Annual meeting of the American Ceramic Society, to be held April 28–May 1, 2002, in St. Louis, Missouri. The title of this abstract is:

"Modeling of the Fluid Chemistry Inside the Waste Package Due to Waste Form and Waste Package Corrosion" by V. Jain and N. Sridhar.

This presentation is a result of the activities conducted in FY2001 and FY2002 under task 01402.571 to resolve the issue related to the changes in the in-package chemistry due to the corrosion of the waste forms and waste package materials.

Please advise me of the results of your programmatic review. Your cooperation in this matter is appreciated.

Sincerely,

  
Budhi Sagar  
Technical Director

Enclosure

VJ:jg

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Modeling OF THE FLUID CHEMISTRY INSIDE THE WASTE PACKAGE DUE TO WASTE FORM AND WASTE PACKAGE CORROSION, V. Jain and N. Sridhar, Center for Nuclear Waste Regulatory Analyses, Southwest Research Institute, San Antonio, TX 78238

A typical co-disposal waste package (WP) designed for the proposed high-level waste (HLW) repository at Yucca Mountain will contain five 304L stainless steel (SS) canisters with HLW glass and one DOE-owned spent nuclear fuel disposal canister. Radionuclide release from the WPs is a complex process which depends upon composition and flux of groundwater contacting the waste forms; the dissolution rate of HLW glass and spent nuclear fuel; the corrosion rate of WP components made of Alloys 22, 304L, 316L SS and carbon steel; the solubility of radionuclides, and the retention of radionuclides in the secondary phases. In this study, evolution of the chemical composition of the fluid inside the WP is simulated using the OLI Systems ESP/CSP Software which is a thermodynamic speciation and process simulation software. Discussion will include the effects of WP and glass dissolution rates, groundwater flux, and formation of secondary phases on the chemistry of the leachate solution inside the WP.

This abstract is an independent product of the CNWRA and does not necessarily reflect the views or regulatory position of the NRC.